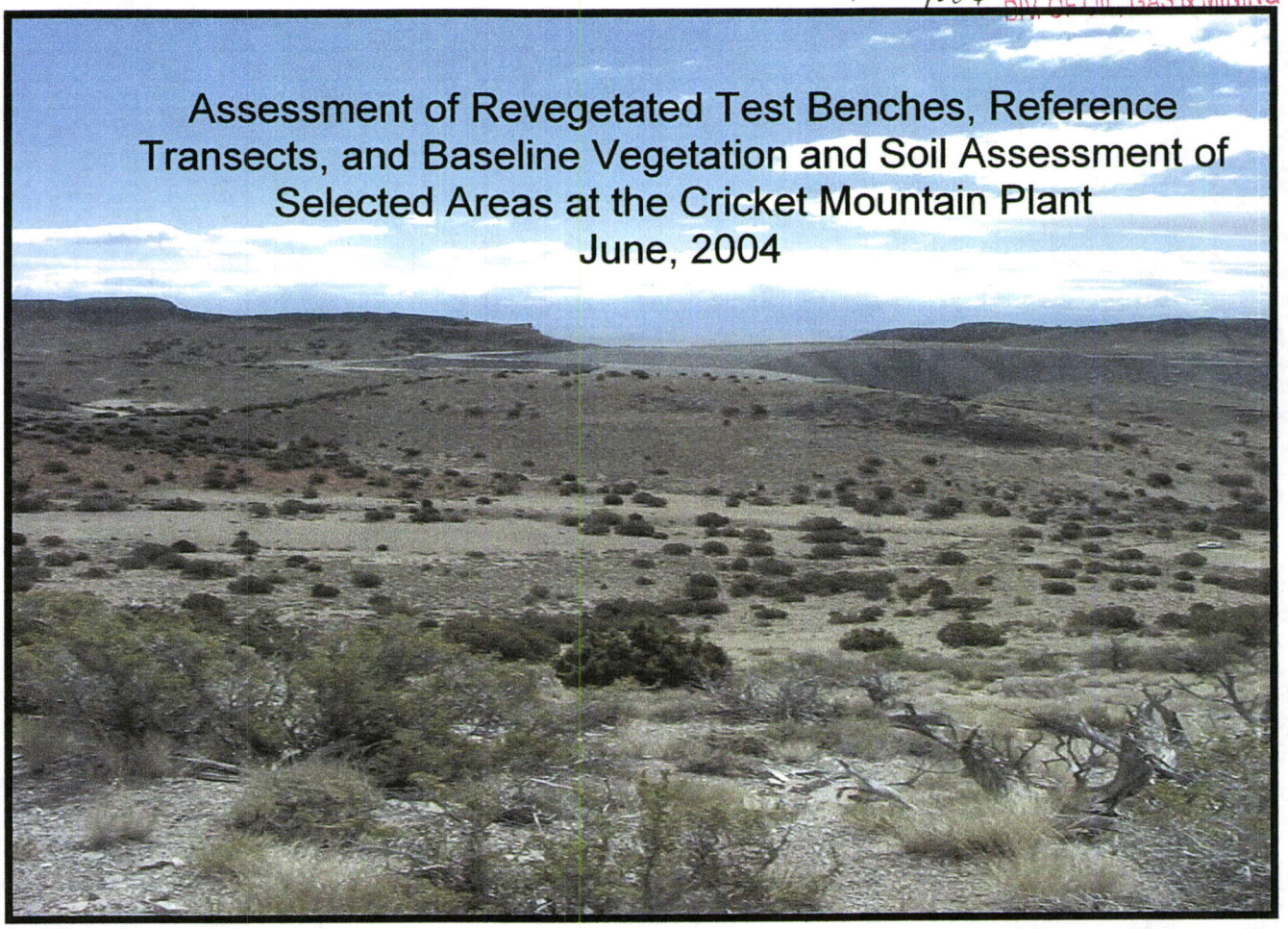
M/027/006

Assessment of Revegetated Test Benches, Reference Transects, and Baseline Vegetation and Soil Assessment of Selected Areas at the Cricket Mountain Plant
June, 2004



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SCOPE

The scope of this work was to assess the revegetation efforts at Graymont Western U.S. Inc (Graymont) Cricket Mountain Plant, assess baseline conditions for proposed mine expansion, and to evaluate vegetation reference areas for the 2004 growing season.

INTRODUCTION

The Cricket Mountain Plant, owned and operated by Graymont, Inc, is an active limestone quarry south of Delta, Utah. The mine is located within the area covered by the Candland Spring topographic quadrangle in T21S, R 9 and 10W. Graymont has reclaimed and revegetated old quarry benches at the mine that are no longer in active operation. Revegetation has proven difficult in these areas of the quarry, and thus Graymont initiated a program to evaluate a variety of revegetation methods in 1996. In April and December of 1996, several benches were treated and seeded with various soil, fertilization and mulching practices with little success. In the fall of 1998, many new revegetation methods were instated. The different revegetation methods utilized in 1998 were a result of a cooperative effort from representatives from Graymont, the Natural Resource Conservation Service (NRCS), and the Utah State Division of Oil, Gas, and Mining (DOGM). These test benches are in the process of assisting Graymont in determining reclamation success of seed mixes, growth amendments, seed bed preparation techniques, and experimental surficial amendments. In March of 2003, the West Dump area and selected benches within the Poison Mountain and Flat Iron Quarry were graded and seeded. The treatments applied to benches in November 1998 and 1996, and March of 2003 are shown in Table 1 (Appendix A). Seed mixes used in 1998, 1996 and 2003 are outlined in Table 2a, 2b, and 2c (Appendix A).

In addition to revegetation assessments, Graymont Lime is in the process of planning an expansion of mining operations. As such, Graymont Lime requested an assessment of baseline vegetation and soil conditions in the areas scheduled for future mine operations in order to set site appropriate and effective reclamation goals. Construction and widening of haul roads and future use of land in the previously disturbed East Allsops Test Burn Quarry are planned in an area just east of the present mine. Three distinct vegetation types are present in these areas: a rock outcrop area with scattered juniper trees and cliffrose bushes (West Haul road), a salt desert shrubland (parts of the west and east haul roads) and an area where a past mining disturbance has altered the vegetation community (East Allsop Test Burn Quarry).

Lastly, Graymont annually evaluates reference transects (undisturbed areas) in native vegetation areas near the Cricket Mountain Plant for comparison purposes for growing conditions and variation in vegetation cover.

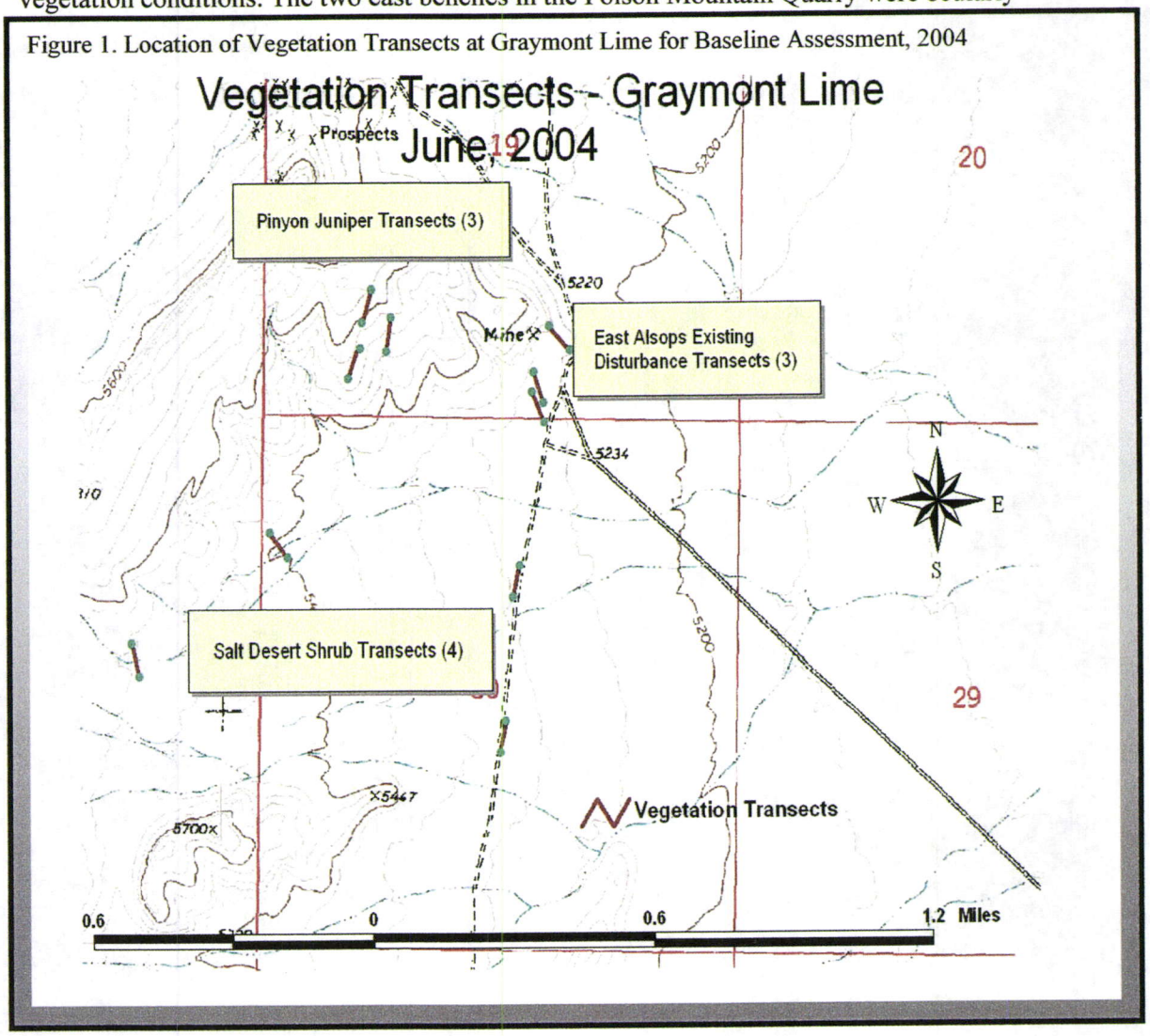
METHODS

Data on vegetation cover and species richness (diversity) were collected on June 16-18, 2004. The vegetation was sampled along 100 meter transects with an optical point projection device in the reference areas, baseline assessment areas and benches that were revegetated previous to 2001. Every two meters, a point was taken and recorded (plant species, rock, litter, bare ground or gravel) by swinging the optical device ½ meter to each side of the transect for a total of 100 points. Three parallel transects were sampled in this manner in each of the two reference areas, for a total of 300 points for each transect. Four transects were sampled in the salt desert shrub area for baseline vegetation information for the east and west haul roads, 3 transects were sampled in the juniper vegetation type for the proposed west haul road, and 3 transects were sampled in the existing disturbance area in the East Allsops Test Burn area for vegetation cover estimates (See Figure 1). Each transect was marked with a GPS unit. When additional species

were present but were not captured by the optical projection device within 1 m on each side of the transects, these were recorded and documented as <1 to represent <1 % cover in the area.

A total of 18 transects were analyzed using the scope. Eight of these transects were within the Poison Mountain Quarry, while 10 new transects were established for an estimate of baseline vegetation conditions. The two east benches in the Poison Mountain Quarry were ocularly

Figure 1. Location of Vegetation Transects at Graymont Lime for Baseline Assessment, 2004



estimated, as the high walls have become too unstable for in depth assessment with the scope (5940 and 5900E).

The areas that had been revegetated more recently were more properly assessed by the creation of a transect 50 m in length set at a random azimuth and the number of desirable vegetation seedlings separated by grasses, forbs and shrubs (to species when possible) were counted on 1m on both sides of the transect. This will yield a more accurate estimate of seedling germination and survival as the vegetation establishment and growth is monitored in the future. Four 50m transects were laid out in the West Dump area, five were laid out on benches in the Flat Iron area and three were established on newly seeded benches in the Poison Mountain Quarry.

Nomenclature follows Welsh et al., A Utah Flora (1993).

RESULTS

BASELINE VEGETATION AND SOIL ASSESSMENTS

VEGETATION

Salt Desert Shrub Type – Vegetation cover and species diversity varies in this community type according to the level of disturbance in the area. Total vegetation cover was 33.5% +/- 6.8%. Vegetation cover in more heavily disturbed areas (roadsides) is generally higher due to the abundance of cheatgrass. Even in the less disturbed areas, the presence of cheatgrass likely over-estimates the baseline vegetation cover value. This is demonstrated by the relative vegetation cover value (48%) that the cheatgrass provides in this area. The native shrubs in the area constitute 38% of the relative cover, and the native cool and warm season grasses provide only 13% of the vegetation cover in the community. According to the NRCS (unpublished survey), the potential plant community in this area should include 55-65% shrubs, 30-40% native grasses and about 5 % forbs. Species diversity is generally higher in the less disturbed areas. The following 4 photographs depict this vegetation type, and Table 1 shows the complete tabulated results for this vegetation type.

Figure 2. Transect 1 in Salt Desert Shrubland

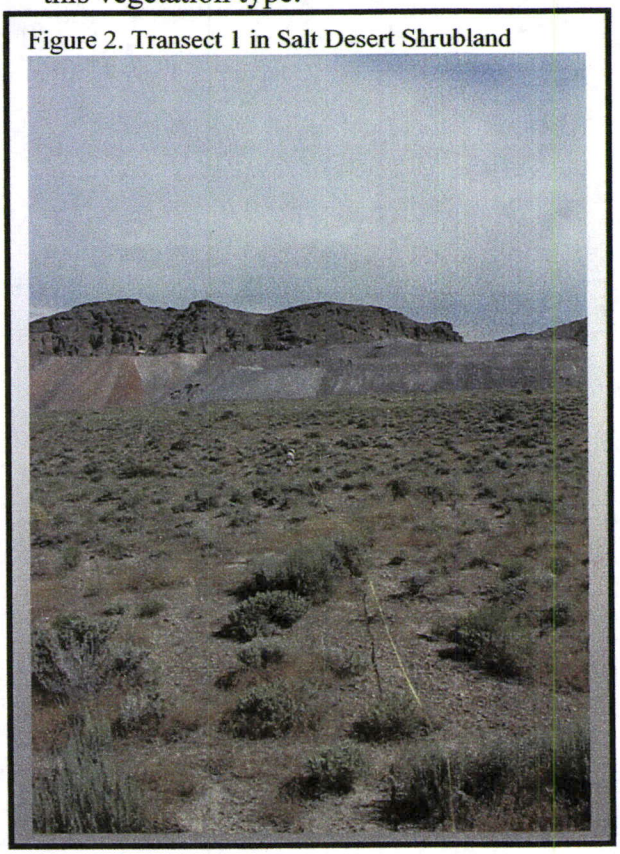


Figure 3. Transect 2 in Salt Desert Shrubland

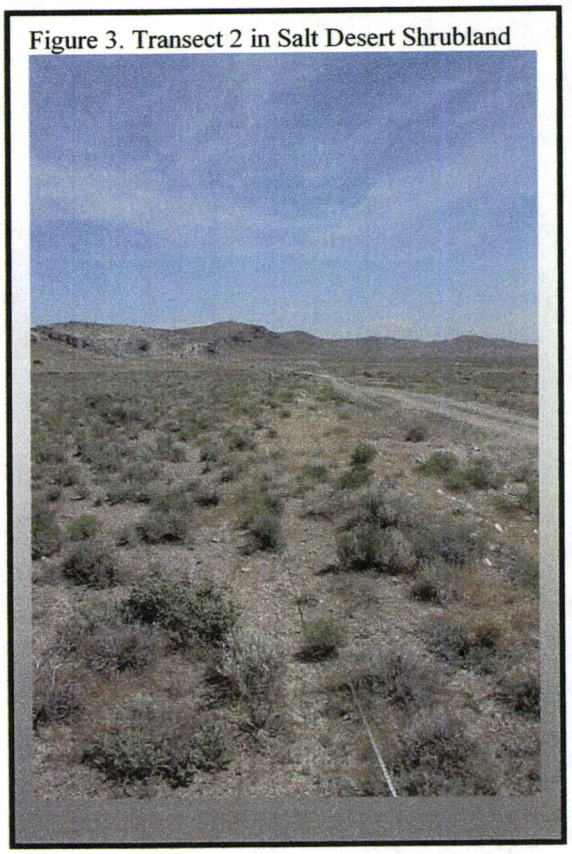


Figure 4. Transect 4 in Salt Desert Shrubland

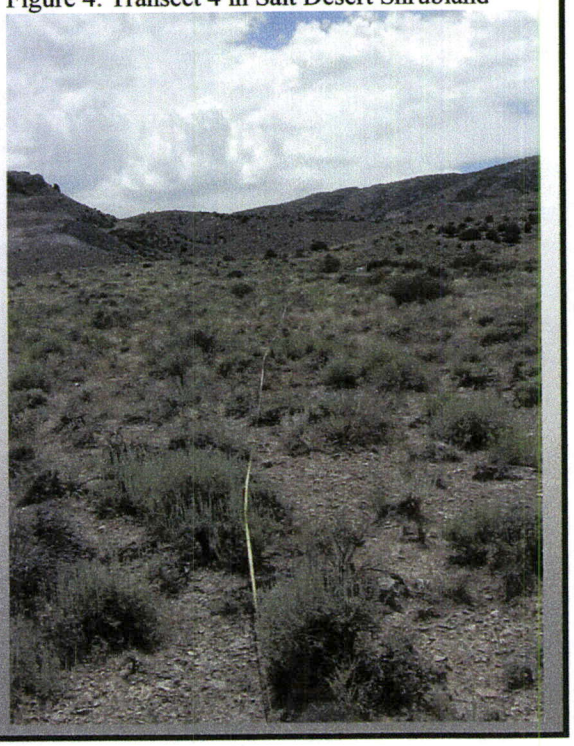


Figure 5. Transect 4 in Salt Desert Shrubland

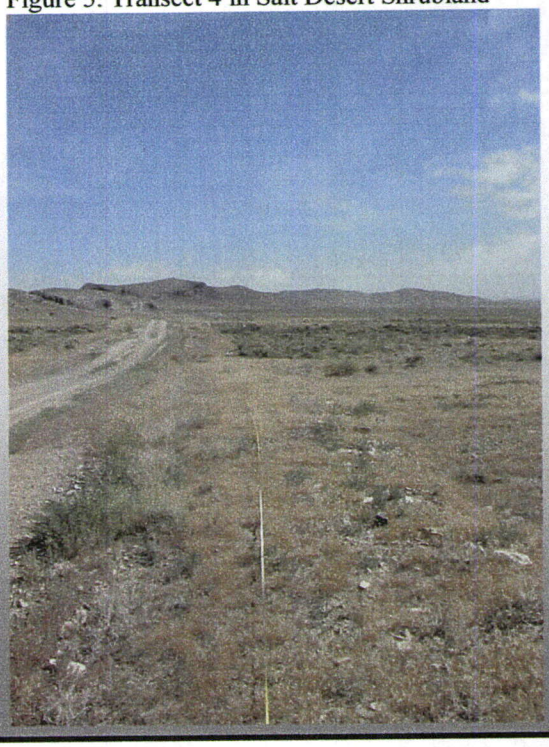


Table 1 Baseline Vegetation Cover of Salt Desert Shrubland Community Type

Salt Desert Shrubland	n=4							
Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Total Vegetation Cover		33.500	6.608	3.304	25.000	41.000		100.00
Total Ground Cover		79.750	4.646	2.323	74.000	84.000		100.00
Bare Soil		19.750	5.315	2.658	14.000	26.000		100.00
Litter		20.750	8.421	4.211	14.000	33.000		100.00
Rock		4.500	2.082	1.041	2.000	7.000		100.00
Gravel		27.750	16.581	8.290	6.000	46.000		100.00
Cool season perennial grasses								
Indian ricegrass	*Oryzopsis hymenoides*	3.000	2.449	1.225	0.000	6.000	8.95	100.00
Sandberg's bluegrass	*Poa sandbergii*	0.250	0.500	0.250	0.000	1.000	0.75	25.00
Bottlebrush squirreltail	*Sitanion hystrix*	0.000	0.000	0.000	0.000	0.000	0.00	50.00
Needle and thread	*Stipa comata*	0.000	0.000	0.000	0.000	0.000	0.00	25.00
Sub-total		**3.250**					**9.70**	
Warm season perennial grasses								
Purple threeawn	*Aristida purpurea*	0.250	0.500	0.250	0.000	1.000	0.75	25.00

Table 1 Baseline Vegetation Cover of Salt Desert Shrubland Community Type

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Galleta grass	*Hilaria jamesii*	0.750	0.957	0.479	0.000	2.000	2.24	75.00
Sand dropseed	*Sporobolus cryptandrus*	0.000	0.000	0.000	0.000	0.000	0.00	25.00
Sub-total		**1.000**					**2.99**	
Annual grasses								
Cheatgrass	*Bromus tectorum*	16.250	12.148	6.074	4.000	33.000	48.51	100.00
Sub-total		**16.250**					**48.51**	
Perennial forbs								
Milkvetch	*Astragalus spp*	0.000	0.000	0.000	0.000	0.000	0.00	25.00
Phlox	*Phlox austromontana*	0.250	0.500	0.250	0.000	1.000	0.75	25.00
Munroe's globemallow	*Sphaeralcea munroana*	0.000	0.000	0.000	0.000	0.000	0.00	25.00
Skeleton weed	*Stephanomeria pauciflora*	0.000	0.000	0.000	0.000	0.000	0.00	25.00
Sub-total		**0.250**					**0.75**	
Annual and biennial forbs								
Halogeton	*Halogeton glomeratus*	0.250	0.500	0.250	0.000	1.000	0.75	50.00
Sub-total		**0.250**					**0.75**	

Table 1 Baseline Vegetation Cover of Salt Desert Shrubland Community Type

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Sub-shrubs								
Broom snakeweed	*Gutierrezia sarothrae*	0.250	0.500	0.250	0.000	1.000	0.75	25.00
Sub-total		**0.250**					**0.75**	
Shrubs								
Little sagebrush	*Artemisia arbuscula*	0.000	0.000	0.000	0.000	0.000	0.00	25.00
Black sagebrush	*Artemisia nova*	5.000	1.826	0.913	3.000	7.000	14.92	100.00
Shadscale	*Atriplex confertifolia*	2.000	1.633	0.816	0.000	4.000	5.97	75.00
Winterfat	*Ceratoides lanata*	0.500	1.000	0.500	0.000	2.000	1.49	75.00
Douglas rabbitbrush	*Chrysothamnus viscidiflorus*	3.750	2.872	1.436	0.000	7.000	11.19	75.00
Nevada Mormon tea	*Ephedra nevadensis*	1.000	0.816	0.408	0.000	2.000	4.86	75.00
Horsebrush	*Tetradymia canescens*	0.000	0.000	0.000	0.000	0.000	0.00	25.00
Spiny horsebrush	*Tetradymia spinescens*	0.000	0.000	0.000	0.000	0.000	0.00	50.00
Sub-total		**12.250**					**38.43**	
Cacti and succulents								
Prickly pear cactus	*Opuntia polyacantha*	0.000	0.000	0.000	0.000	0.000	0.00	50.00
Sub-total		**0.000**					**0.00**	

Pinyon Juniper Community Type- Vegetation in this community type is characterized by sparse tree and large shrub cover with a sparse understory of grasses and smaller shrubs. Total vegetation cover averages 20.33% with a standard deviation of 11.93%. Only 1.6% relative cover was provided by juniper, whereas native shrubs and sub-shrubs provided about 42% relative cover. Cheatgrass remained a dominant contributor to the vegetation cover at about 28% relative cover. Native grasses contributed almost 20% to the vegetation cover in the area, most of which was bluebunch wheatgrass and Indian ricegrass. The following photographs depict this vegetation type, and Table 2 shows the complete tabulated results of the juniper vegetation type.

Figure 6 Transect 1 of Juniper vegetation type

Figure 7 Transect 2 of Juniper vegetation type

Figure 8 Transect 3 of Juniper vegetation type

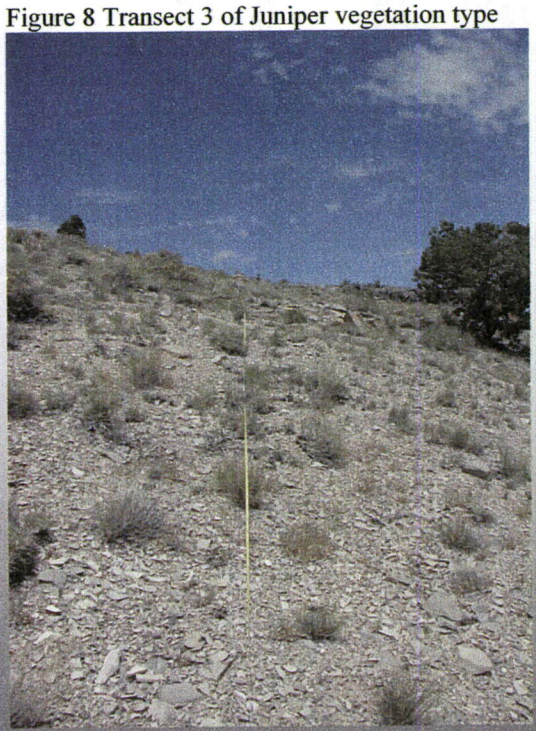


Table 2 Baseline Vegetation Cover for Juniper Vegetation Community Type

Juniper Community Common Name	n=3 ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Total Vegetation Cover		20.333	11.930	6.888	7.000	30.000		100.00
Total Ground Cover		94.333	1.155	0.667	93.000	95.000		100.00
Bare Soil		5.667	1.155	0.667	5.000	7.000		100.00
Litter		11.667	1.528	0.882	10.000	13.000		100.00
Rock		29.667	1.528	0.882	28.000	31.000		100.00
Gravel		33.333	7.095	4.096	27.000	41.000		100.00
Cool season perennial grasses								
Bluebunch wheatgrass	*Agropyron spicatum*	2.000	2.646	1.528	0.000	5.000	9.83	100.00
Indian ricegrass	*Oryzopsis hymenoides*	1.667	1.155	0.667	1.000	3.000	8.19	100.00
Sandberg's bluegrass	*Poa sandbergii*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Needle and thread	*Stipa comata*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Sub-total		**3.667**					**18.02**	
Warm season perennial grasses								
Galleta grass	*Hilaria jamesii*	0.333	0.577	0.333	0.000	1.000	1.62	33.33
Sub-total		**0.333**					**1.62**	

Table 2 Baseline Vegetation Cover for Juniper Vegetation Community Type

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Annual grasses								
Red brome	*Bromus rubens*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Cheatgrass	*Bromus tectorum*	5.667	4.509	2.603	1.000	10.000	27.87	100.00
Sub-total		**5.667**					**27.87**	
Perennial forbs								
Sun dancer daisy	*Haplopappus acaulis*	0.000			0.000	0.000	0.00	100.00
Gray's lomatium	*Lomatium grayii*	0.000	0.000	0.000	0.000	0.000	0.00	66.67
Broomrape	*Orobanche corymbosa*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Munroe's globemallow	*Sphaeralcea munroana*	0.333	0.577	0.333	0.000	1.000	1.62	66.67
Sub-total		**0.333**					**1.62**	
Annual and biennial forbs								
Blue mustard	*Chorispora tenella*	1.000	1.000	0.577	0.000	2.000	4.91	66.67
Sub-total		**1.000**					**4.91**	
Sub-shrubs								
Broom snakeweed	*Gutierrezia sarothrae*	0.667	1.155	0.667	0.000	2.000	3.28	100.00
Sub-total		**0.667**					**3.28**	
Shrubs								
Black sagebrush	*Artemisia nova*	4.000	2.000	1.155	2.000	6.000	19.67	100.00
Shadscale	*Atriplex confertifolia*	0.667	1.155	0.667	0.000	2.000	3.28	66.67

Table 2 Baseline Vegetation Cover for Juniper Vegetation Community Type

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Winterfat	*Ceratoides lanata*	0.667	1.155	0.667	0.000	2.000	3.28	100.00
Douglas rabbitbrush	*Chrysothamnus viscidiflorus*	0.667	0.577	0.333	0.000	1.000	3.28	66.67
Nevada Mormon tea	*Ephedra nevadensis*	1.333	1.528	0.882	0.000	3.000	6.54	66.67
Cliffrose	*Purshia mexicana*	0.000	0.000	0.000	0.000	0.000	0.00	66.67
Spiny horsebrush	*Tetradymia spinescens*	0.667	1.155	0.667	0.000	2.000	3.28	66.67
Sub-total		**8.000**					**39.35**	
Trees								
Juniper	*Juniperus osteosperma*	0.333	0.577	0.333	0.000	1.000	1.62	66.67
Sub-total		**0.333**					**1.62**	

East Allsops Test Burn Quarry Existing Disturbance – A different company mined this area previous to Graymont Lime procured the property. The vegetation community is generally characterized by the abundance of weedy species such as stork's bill (*Erodium cicutarium*) and cheatgrass. The relative cover provided by cheatgrass and stork's bill is 53% and 17% respectively. The following photographs depict this area, and Table 3 shows the complete tabulated results for the existing disturbed area at the Test Burn Quarry.

Figure 9. Transect 1 of the existing disturbance at the East Allsops Test Burn Quarry

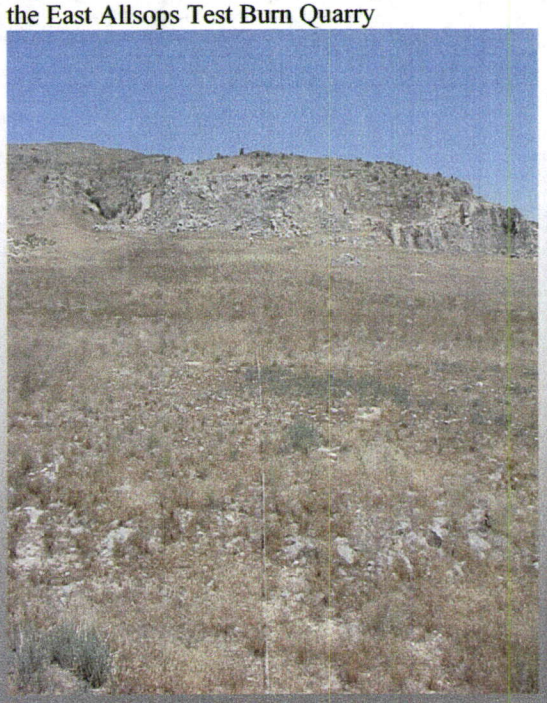


Figure 10 Transect 2 of the existing disturbance at the East Allsops Test Burn Quarry

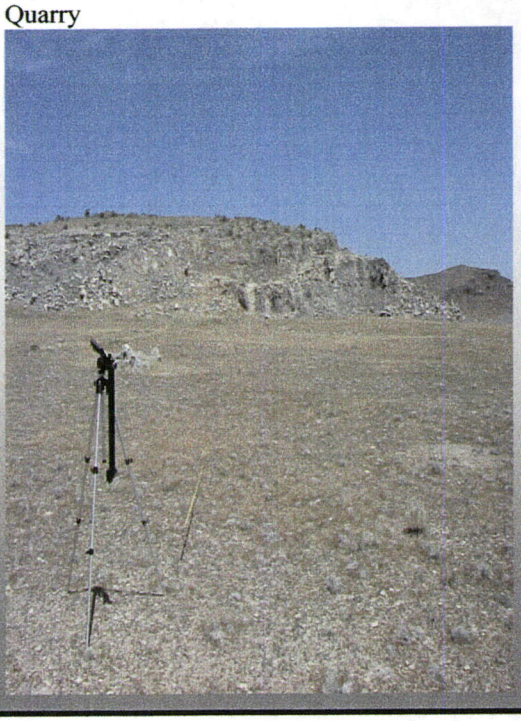


Table 3 Vegetation Community within existing disturbance area near the East Allsops Test Burn Quarry

East Allsops Test Burn Quarry Existing Disturbance n=3

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Total Vegetation Cover		33.330	3.215	1.856	31.000	37.000		100.00
Total Ground Cover		95.667	1.155	0.667	95.000	97.000		100.00
Bare Soil		4.333	1.155	0.667	3.000	5.000		100.00
Litter		20.000	8.718	5.033	14.000	30.000		100.00
Rock		16.000	6.557	3.786	9.000	22.000		100.00
Gravel		22.667	12.858	7.424	8.000	32.000		100.00
Cool season perennial grasses								
Indian ricegrass	*Oryzopsis hymenoides*	0.333	0.577	0.333	0.000	1.000	1.00	33.33
Needle and thread	*Stipa comata*	0.667	1.155	0.667	0.000	2.000	2.00	66.67
Slim tridens	*Tridens muticus*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Sub-total		**1.000**					**3.00**	
Warm season perennial grasses								
Purple threeawn	*Aristida purpurea*	3.667	5.508	3.180	0.000	10.000	11.01	66.67
Galleta grass	*Hilaria jamesii*	1.000	1.414	0.816	0.000	2.000	3.00	66.67
Sand dropseed	*Sporobolus cryptandrus*	1.333	1.155	0.667	0.000	2.000	4.00	100.00
Sub-total		**6.000**					**18.02**	

Table 3 Vegetation Community within existing disturbance area near the East Allsops Test Burn Quarry

Common Name		Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Introduced perennial grasses								
Crested wheatgrass	*Agropyron cristatum*	0.667	1.155	0.667	0	2	2.00	66.67
Sub-total		**0.667**					**2.00**	
Annual grasses								
Cheatgrass	*Bromus tectorum*	17.667	3.215	1.856	14.000	20.000	53.05	100.00
Sub-total		**17.667**					**53.05**	
Perennial forbs								
Munroe's globemallow	*Sphaeralcea munroana*	0.333	0.577	0.333	0.000	1.000	**1.00**	33.33
Sub-total		**0.333**					**1.00**	
Annual and biennial forbs								
Stork's bill	*Erodium cicutarium*	5.667	2.082	1.202	4	8	17.02	100
Halogeton	*Halogeton glomeratus*	1.000	1.000	0.577	0.000	2.000	3.00	66.67
Sub-total		**6.667**					**20.02**	
Sub-shrubs								
Broom snakeweed	*Gutierrezia sarothrae*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Sub-total		**0.000**					**0.00**	
Shrubs								
Douglas rabbitbrush	*Chrysothamnus viscidiflorus*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Sub-total		**0.000**					**0.00**	

SOIL DESCRIPTION

Two soil types exist in the proposed mine expansion area, and are dictated by landscape position. Soils on the mountainsides and hill tops differ from those that are located on the valley bottoms. The soils on the mountain sides and hilltops are rock outcrops that are described as very shallow **Amtoft- Lodar** association (unpublished soil survey). The majority of the area is the Amtoft soils, with inclusions of Lodar and other soils. The Amtoft soils lie on 15 to 60% slopes and are characterized by the presence of fractured limestone at only 10-18 inches below the surface. Stony to extremely stony loam lies above the fractured limestone. A secondary carbonate accumulation generally lies at only 3 to 8 inches below the surface. These soils are very difficult to revegetate because of low water holding capacity, a shallow rooting depth and the very low annual precipitation (average 8 inches per year) in the area. The Lodar soils are very similar to the Amtoft type and present the same management and revegetation concerns.

The soils in the valley bottoms are described as **Dera sandy loam**. Dera soils are deep, somewhat excessively drained soils with low water holding capacity. Generally, 3-4 inches of topsoil of gravelly sandy loam overlies additional horizons of gravelly or gravelly sandy loam to a depth of 60 inches. A secondary carbonate accumulation (hardpan) generally lies at a depth of 8 inches. Inclusions of slightly different soils within the Dera sandy loam are often a slightly different texture de to their position on the landscape (thus different development conditions) and are able to support slightly different vegetation communities. Although these soils are deep, they are also difficult to revegetate because of low water holding capacity and low annual precipitation.

BENCHES OF POISON MOUNTAIN QUARRY

Table 7 in Appendix A is a tabular summary of detailed information (vegetation cover, relative cover, and species present) regarding each bench and area sampled. 2004 was the sixth consecutive year of drought in the area. Vegetation in most areas was showing signs of the prolonged drought such as partial desiccation to complete death of the plants. Moreover, m*uch of the vegetation cover varies greatly from year to year is a result of the random placement of the transect. As bond release approaches, it will likely be necessary to place several transects on the benches to get a more accurate representation of the vegetation cover.*

EAST BENCHES (SEEDED IN DECEMBER 1996)

5940E –Total vegetation was similar to 2003. Vegetation cover was ocularly estimated at 2-3%. This bench has become excessively difficult to reach on foot as the highwalls have become unstable. Therefore, this bench was photographed from the south end only. Vegetation species that contributed to the cover include intermediate wheatgrass (*Elytrigia intermedia*), Russian wildrye (*Psathrostachys juncea*), crested wheatgrass (*Agropyron cristatum*), purple three-awn (*Aristida pupurea*), cheatgrass (*Bromus tectorum*), forage kochia (*Kochia prostrata*), shadscale (*Atriplex confertifolia*), bluebunch wheatgrass (*Agropyron spicatum*), Indian ricegrass (*Oryzopsis hymenoides*), halogeton (*Halogeton glomeratus*), black sagebrush (*Artemisia nova*), broom snakeweed (*Gutierrezia sarothrae*) and 4-wing saltbush (*Atriplex canescens*).

5900E - This bench has also become excessively difficult to reach on foot and the highwalls have become unstable. Therefore, this bench was photographed from the south end only, and vegetation cover ocularly estimated. The high walls above this bench are beginning to fall, leaving large piles of loose boulders on the bench. Total vegetation cover was approximated at 1%. The vegetation present on this bench included Indian ricegrass, Russian wildrye, 4-wing saltbush, halogeton, shadscale and forage kochia, and crested wheatgrass.

WEST BENCHES-

5960W – Vegetation cover was beginning to appear on this bench from the regrading and reseeding conducted in March of 2003. 101 grass seedlings, 8 shadscale plants, 23 four-wing saltbush plants and 4 forage kochia were counted along a 50 X 2 meter transect. Select areas at the south end of the bench had small populations of more mature 4-wing saltbush, shadscale, Russian wildrye, intermediate wheatgrass and crested wheatgrass from an earlier seeding. Any estimate of vegetation cover at present would not be statistically defensible.

5940W – Vegetation cover was also beginning to appear on this bench from the regrading and reseeding of March 2003. Twenty five (25) grass seedlings, 31 forage kochia plants, 1 penstemon, 2 black sagebrush, 6 shadscale, and 4 four-wing saltbush plants were counted along a 50 X 2 meter transect. The south end (the undisturbed section) of the bench supports 4-wing saltbush, shadscale, Russian wildrye, forage kochia, intermediate wheatgrass, and crested wheatgrass. Any estimate of vegetation cover at present would not be statistically defensible.

5920W – Vegetation cover was 18% along the 100m transect. Perennial grasses provided 89% of the vegetation cover . Crested wheatgrass was the most prevalent species with 50% relative cover, while Siberian wheatgrass (*Agropyron fragile*) had a relative cover of 33%. Streambank wheatgrass had a relative cover of 6%, and Eaton's penstemon (*Penstemon eatonii*)

provided 11% of the vegetation cover. Other species found on this bench were shadscale, four-wing saltbush, Indian ricegrass, intermediate wheatgrass, Munroe globemallow (*Sphaeralcea munroana*), black sage (*Artemisia nova*), shadscale, and forage kochia. There was evidence of grazing on this bench, as well as 5900W and 5880 W. Most of the flowering heads of the penstemons had been grazed.

5900W –Vegetation cover was 15% along the 100m transect for this bench. Siberian wheatgrass accounted for 47% of the vegetation cover, while crested wheatgrass accounted for 27% of the vegetation cover. Other dominant species on the bench were Indian ricegrass with 13% relative cover, and streambank wheatgrass, intermediate wheatgrass, halogeton, and Eaton's penstemon with 7% relative cover each. Other species present on this bench were cheatgrass, thickspike wheatgrass (*Elymus lanceoluatus* ssp *lanceolatus*), Munroe's globemallow, forage kochia, black sagebrush, and 4-wing saltbush.

5880 W – Cover on this bench was 19% along the 100m transect. Crested wheatgrass was the most abundant species, accounting for 74% of the cover, while Siberian wheatgrass accounted for 21%. Thickspike wheatgrass (*Elymuslanceolatus* ssp. *lanceolatus)* was 5% of the vegetation cover. Eaton's penstemon, Indian ricegrass, forage kochia, Munroe's globemallow black sagebrush and 4-wing saltbush were present on this bench, but were not intercepted by the scope.

5880 middle – This bench had a cover value of 27% along the 100m transect. Crested wheatgrass accounted for 48% of the vegetation cover, while Siberian wheatgrass accounted for 22% of the vegetation cover. Streambank wheatgrass accounted for 4% of the vegetation cover, while Palmer's penstemon (*Penstemon palmeri*), halogeton, 4-wing saltbush and shadscale each accounted for 4% of the vegetation cover. Eaton's penstemon accounted for 11% of the vegetation cover. Other species encountered on this bench were thickspike wheatgrass, Indian ricegrass, bottlebrush squirreltail, cheatgrass, black sagebrush, forage kochia, and yellow sweetclover.

5880 North – This area of the 5880 bench is further north than 5880 Middle, and has smaller fines as part of the growth medium instead of larger cobbles as in 5880 middle. Total vegetation cover was 18% along the 100m transect, however 72% of that vegetation cover was weedy species such as cheatgrass, thus making the effective vegetation cover only 5%. The majority of the cover was four-wing saltbush at 28%. Gardner's saltbush (*Atriplex gardneri*), shadscale, black sagebrush, Siberian and crested wheatgrass, forage kochia, halogeton, and Eaton's penstemon, were also present on the bench but not intercepted by the scope.

5900 –This bench had a cover value of 8% along the 100m transect. The majority of the cover was provided by Siberian and crested wheatgrasses (38% relative cover each), while streambank wheatgrass accounted for 13% relative cover, and Indian ricegrass accounted for 12% of the vegetation cover. Eaton's penstemon, cheatgrass, yellow sweetclover, 4-wing saltbush, Munroe's globemallow, black sagebrush, Gardner's saltbush, broom snakeweed, and shadscale were also present on the bench, but were not intercepted by the scope.

5940NW – Vegetation cover was 18% along the 100m transect on this bench, however 4% of the vegetation cover was cheatgrass making the effective cover only 14%. 5940NW was the only bench treated in 1996 that included a topsoil amendment. Much of the cover on the transect was accounted for by crested wheatgrass (56% relative cover), followed by Russian wildrye (22% relative cover), and intermediate wheatgrass (17% relative cover). Other species present were

broom snakeweed, forage kochia, four-wing saltbush and yellow sweet clover (*Melilotus officinalis*). Rabbitbrush is also present on this bench, signifying some natural revegetation, as rabbitbrush was not included in the seed mix.

5920NW- This bench had a cover of 12% along the 100m transect, Siberian wheatgrass accounted for 35% of the vegetation cover, and 33% was contributed by crested wheatgrass. Eaton's penstemon accounted for 17% of the vegetation cover and 4-wing saltbush accounted for 25%. Other species encountered on this bench were cheatgrass, halogeton, shadscale, forage kochia, black sagebrush, and Gardner's saltbush.

5860- Seedlings were counted on this bench along a 50 X 2 meter transect to assess germination success. Only 16 grasses, 6 penstemon plants, 19 shadscale plants, 3 broom snakeweed plants, and 1 black sagebrush were counted along the transect. Most of the bench was covered with cheatgrass and halogeton. Any estimate of vegetation cover at present would not be statistically defensible.

Figure 11. Bench 5940 E

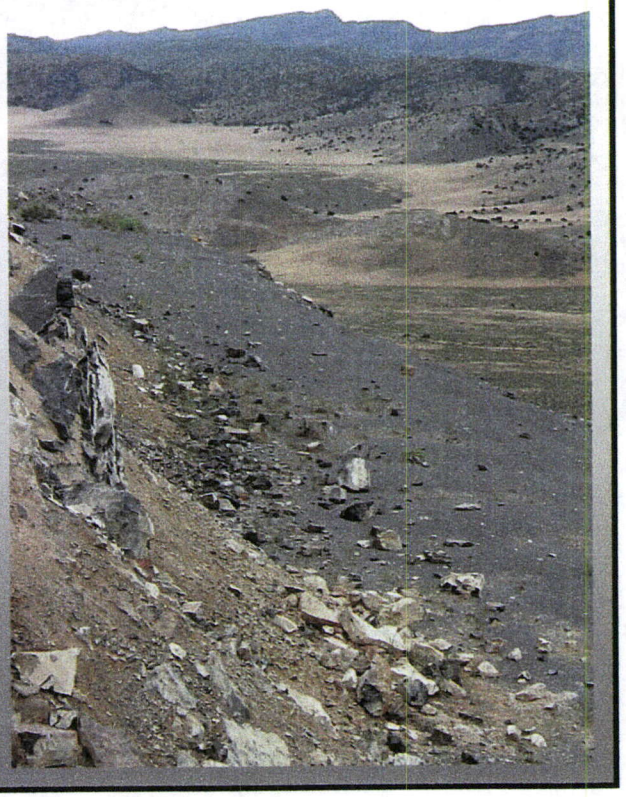


Figure 12. Bench 5900E

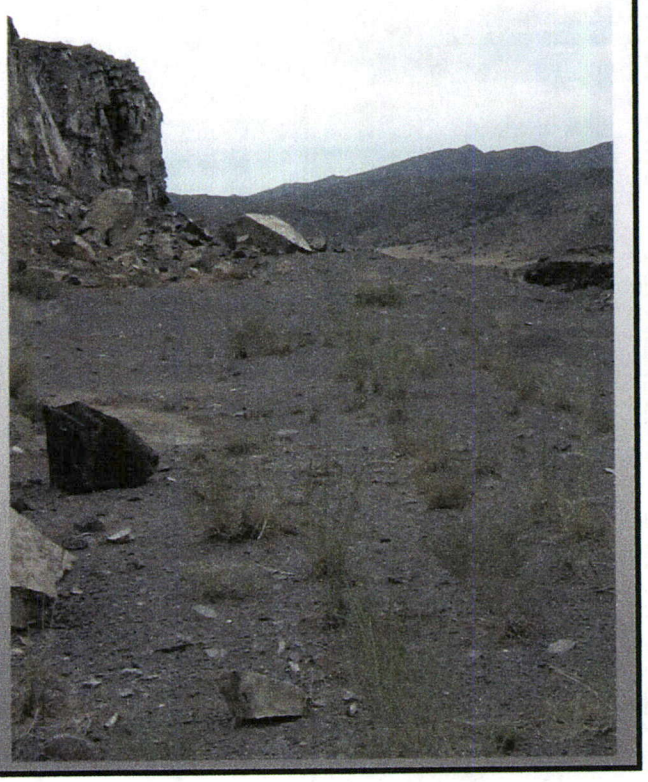


Figure 13. Bench 5960W

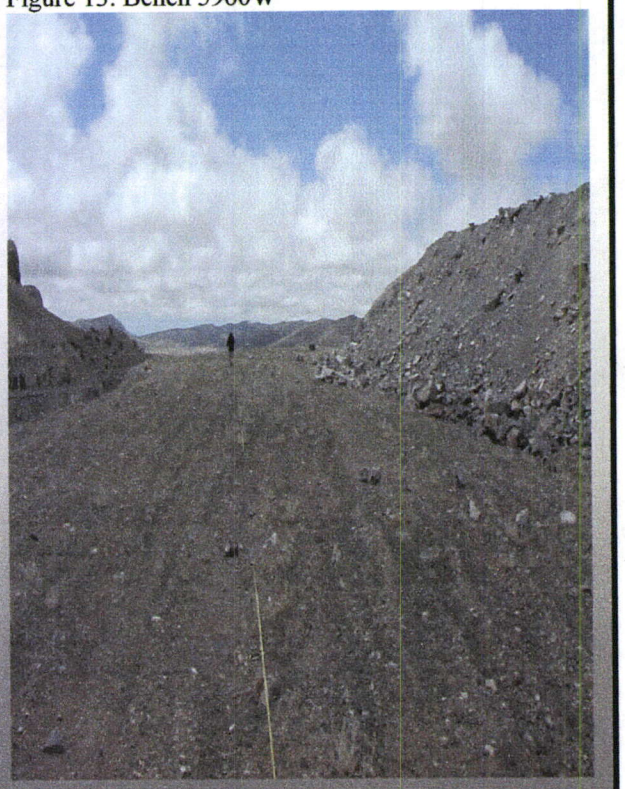


Figure 14. Bench 5940W

Figure 15. Bench 5920W

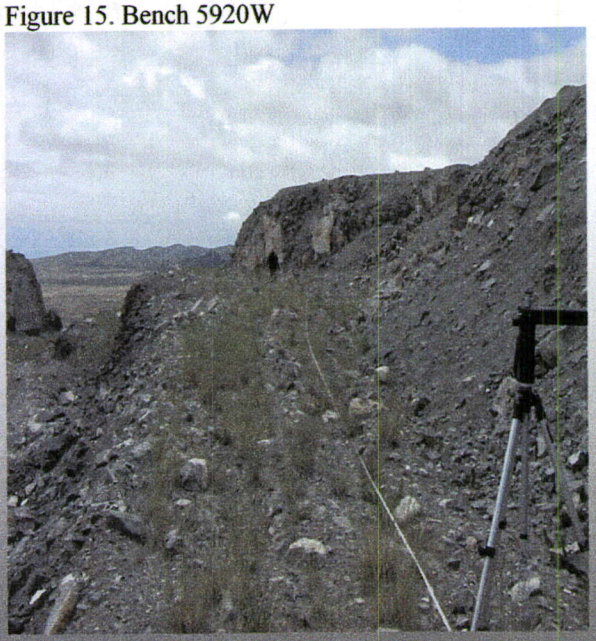


Figure 16. Bench 5900W

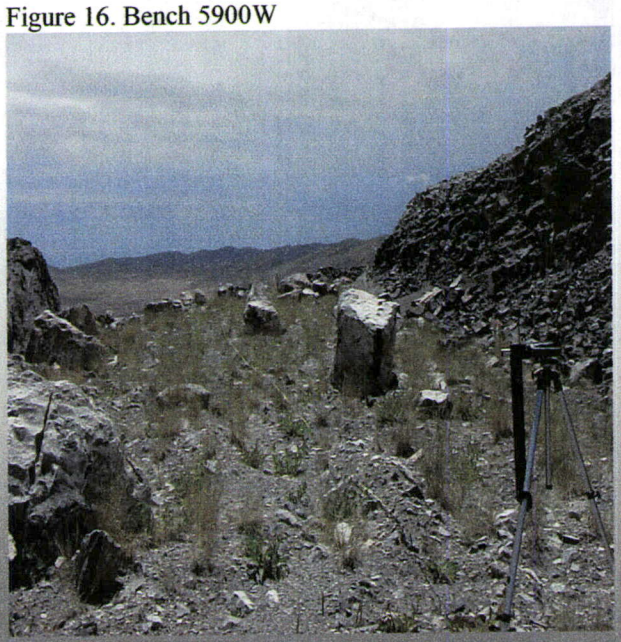


Figure 17. Bench 5880W

Figure 18. Bench 5880 middle

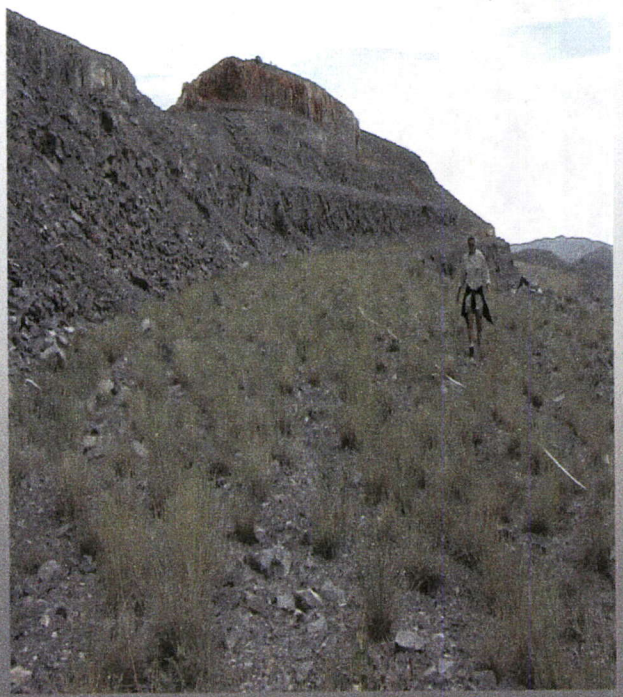


Figure 19. Bench 5880N

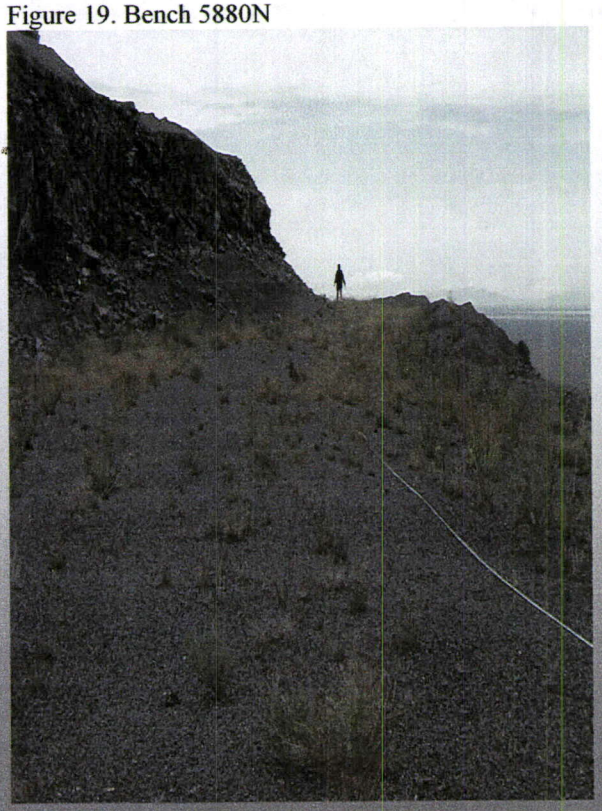


Figure 20. Bench 5900N

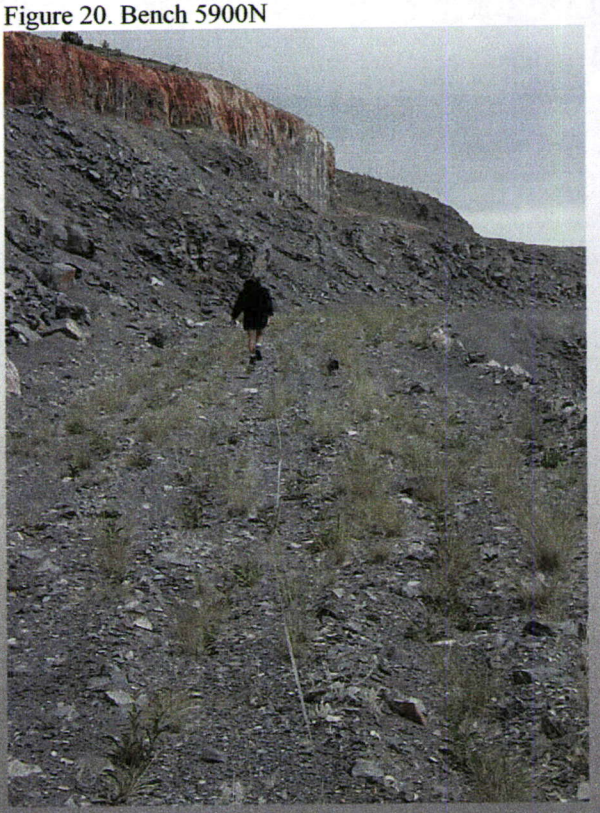


Figure 21. Bench 5940NW

Figure 22. Bench 5920NW

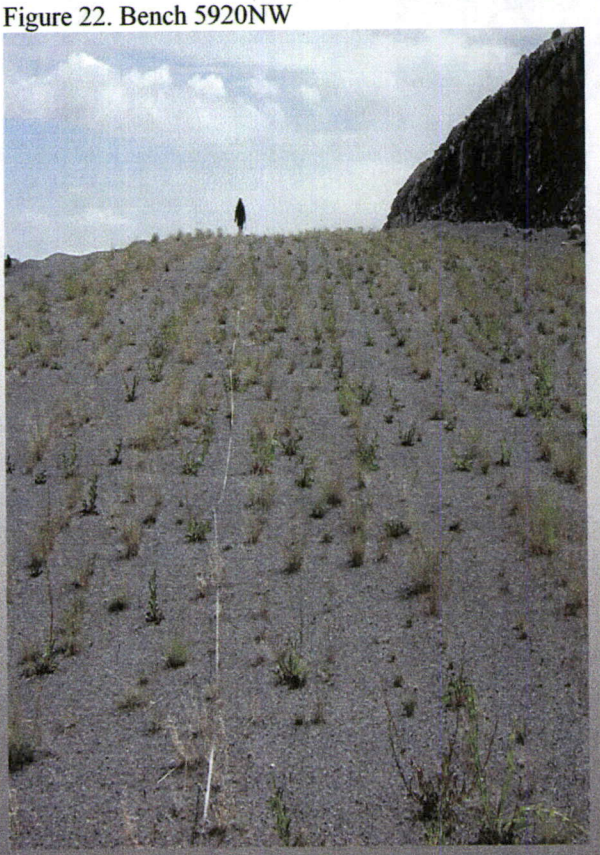
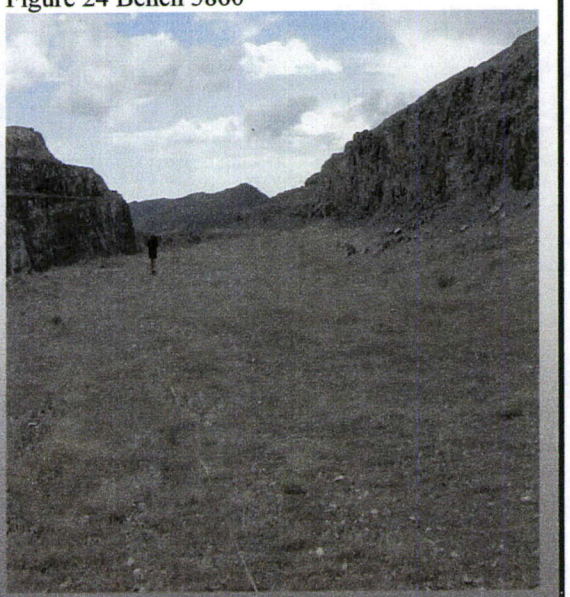


Figure 23. Bench 5860

Figure 24 Bench 5860



WEST DUMP AREA

Four transects were placed within the West Dump. Germination and seedling survival varied widely. Table 8 in Appendix A shows tabulated information regarding the West Dump and Flat Iron areas. The upper West dump had two somewhat distinct areas, with equally distinct germination results. generally had good results – 698 grass seedlings, 9 forage kochia, yellow sweet clover, 19 penstemon, 1 black sagebrush 40 4-wing saltbush, and 61 shadscale plants were counted in the 100 sq.m area. However, the rougher, more rocky area of the upper West Dump did not have nearly the seedling count. Five grass seedlings, 3 yellow sweet clover, 4 penstemon, 21 4-wing salt bush and 5 shadscale plants were counted. The mid tier of the West Dump also appeared to be a very successful seeding. 881 grass seedlings, 25 forage kochia, 4 yellow sweet clover, 2 penstemon, 256 4-wing saltbush, 57 shadscale and 5 winterfat plants were counted in a 100 sq meter area. However, the lower tier of the West Dump did not appear to be such a successful seeding. Only 36 grass seedlings, 4 forage kochia, 1 yellow sweet clover, 14 4-wing saltbush and 9 shadscale plants were counted. Any estimate of vegetation cover at present in any of these areas would not be statistically defensible.Topsoil was spread 14 months earlier on the lower tier of the West Dump than the rest of the area. It is possible the soil did not have enough nutrients and/or microbial activity as the other areas in order to support the seedings at the time of seeding.

FLAT IRON AREA

The upper benches (6080, 6110, 6140 and 6180) of the Flat Iron area were all generally dominated by halogeton with very little desirable vegetation present. A few grass seedlings, forage kochia plants and very few shadscale were counted in these areas (See Appendix A Table 8). The saddle of the Flat Iron area showed strong germination and establishment of more

vegetation, particularly forage kochia. Specifically, 21 grass seedlings, 45 forage kochia, 15 4-wing saltbush and 7 shadscale plants were counted in this area. Any estimate of vegetation cover at present would not be statistically defensible.

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Figure 25. Rough upper tier of the West Dump

Figure 26. Middle tier of the West Dump

Figure 27. Flat Iron Saddle

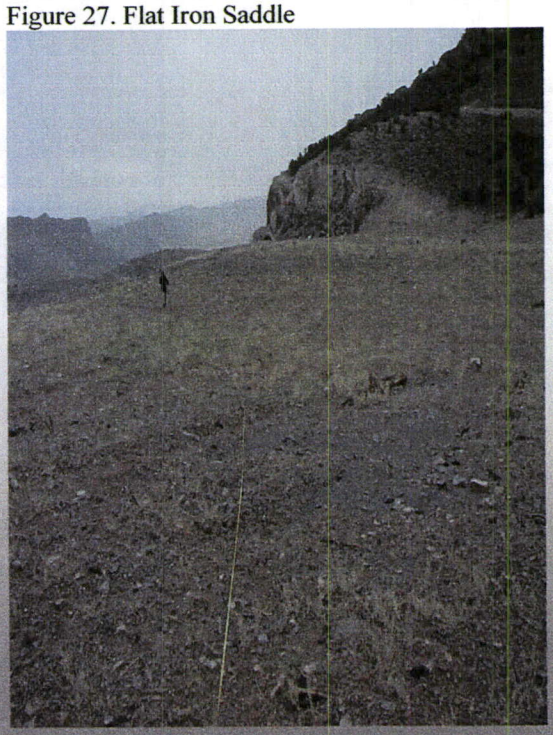


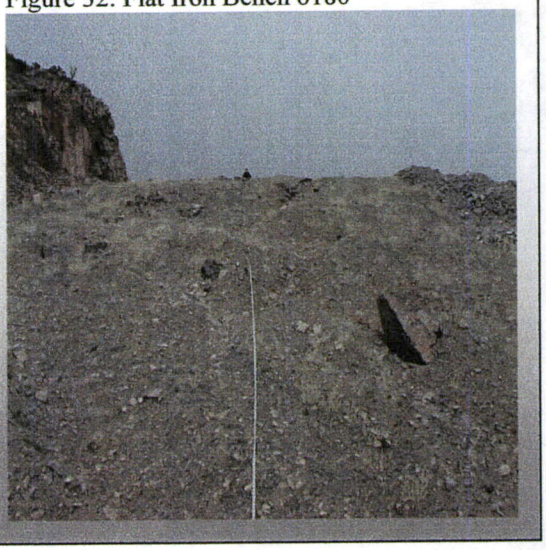
Figure 28. Flat Iron saddle close up

Figure 29 Flat Iron Bench 6110

Figure 30. Flat Iron Bench 6080

Figure 31. Flat Iron Bench 6140

Figure 32. Flat Iron Bench 6180



REFERENCE TRANSECTS

The reference transects are located approximately ¾ mile West of the Poison Mountain Quarry. The location of the reference transects was chosen in 1998 for similar plant species, vegetation densities, exposed limestone, slope and aspect. (See Appendix B for photos and locations of Transects 1 and 2)

Transect 1 (VT-98-1) – Total vegetation cover for this transect was 23.6 +/- 3.7%. The effects of the ongoing drought is noticeable as some of the native vegetation is struggling to survive the lack of moisture. Cool season perennial grasses and shrubs contributed the most to the vegetation cover- 22.5% and 28.2% relative cover respectively. Bluebunch wheatgrass was the most abundant cool season grass (18% relative cover), while Indian ricegrass contributed 2.8% and Sandberg's bluegrass contributed 1.4% of the vegetation cover. Purple threeawn (*Aristida purpurea*), a warm season grasses contributed 1.4% of the vegetation cover. Annual grasses (introduced, non-native species) provided about 9.8% of the vegetation cover. Perennial forbs such as Munroe's globemallow and Gray's lomatium (*Lomatium grayii*) were present on the transect, but were not intercepted by the scope. Phlox (*Phlox austromontana*) contributed 1.4% to the vegetation cover. Sub-shrubs such as broom snakeweed and rock spirea (*Petrophytum caespitosum*) provided about 15% of the vegetation cover. The most abundant shrub was cliffrose (*Purshia mexicana*), (over 16% relative cover), while black sagebrush was almost 10% of the total vegetation cover. Juniper trees (*Juniperus osteosperma*) provided about 17% of the vegetation cover.

Species represented with a <1 in Appendix B -Table 1 denotes the presence of the species on the transect, but not observed with the optical scope.

Ground cover was dominated by rock at 31% of the total cover, followed by gravel (28%), and litter (15%) and bare ground (2%). Gravel was defined as rock fragments less than 2 inches in diameter.

Transect 2 (VT-98-2) – Total vegetation cover for reference transect 2 was 25% +/- 5.2%. Bluebunch wheatgrass (28% relative cover) was by far the most prominent grass, followed by galleta grass (*Hilaria jamesii*) and purple threeawn (2.6 and 1.3% relative cover respectively). Broom snakeweed provided 16% of the total vegetation cover, and true shrubs contributed over 35% of the total vegetation cover. Most of the shrub cover was black sage (~22%), while cliffrose contributed about 9%. Utah juniper accounted for only 4% of the total vegetation cover.

Species denoted with a <1 in appendix B - Table 2 signify that the species was present on the transect, but was not observed by the optical projection device.

Total ground cover was dominated by gravel (29%), followed by rock (28%), and litter (18%). Total ground cover was 97%, which leaves bare soil to account for the other 3% of the ground cover.

REFERENCE TRANSECTS

Comparison of 1998- 2004 data – Appendix B - Table 3 shows the values of the reference transects for the years 1998 -2004. Since the range of natural variation is so broad in native vegetation communities, no significant differences can be declared. However, trends can be noted. The difference in the vegetation cover attributable to Utah Juniper and many shrubs in these years is likely due to a slight difference in transect placement. Transect location can change these numbers considerably since the trees are sparsely spaced throughout the community. Additionally, slight changes in the timing and amount of precipitation can make considerable changes in growth stages and annual plant production from year to year.

SUMMARY

An assessment of various revegetation techniques was performed at Graymont Lime's Cricket Mountain Plant in June, 2004. Several benches were evaluated to assist Graymont in determining reclamation success of seed mixes, growth amendments, seed bed preparation techniques, and experimental surficial amendments. An annual evaluation of reference transects at the Cricket Mountain Plant was also conducted to monitor overall vegetation patterns. Baseline assessments were performed in a salt desert shrub vegetation type, a juniper vegetation type and a previously disturbed area to analyze present vegetation characteristics for future reclamation goals in these areas.

BENCHES

Additional growing seasons have yielded more evidence as to which revegetation treatments are most successful. Some benches in the Cricket Mountain Quarry may be nearing the possibility of bond release. Photographs and field notes have been used since 1999 to augment information from the optical point projection device. Plant development is most notable on benches with irregular topography. Irregular surfaces create microsites that can promote plant establishment by protection from the wind and increased moisture accumulation. Although benches with smooth topography have lower vegetation cover, the species diversity on these benches is noteworthy.

Since new areas at the Cricket Mountain plant were seeded in March of 2003, proper assessment of these newly seeded areas was not possible in June of the same year. However, it appeared that the direct-hauled topsoil had noticeable new growth, although the areas that received stockpiled topsoil will be monitored to see if they will provide a suitable environment for plant growth. The vegetation assessment of 2004 shall assist in determining the level of revegetation success in these newly seeded areas.

It shall be important to continue to monitor these benches to determine which soil amendments are most effective in producing a healthy, self-sustaining vegetation community.

BASELINE ASSESSMENTS

The vegetation present in the areas assessed for baseline conditions varied from relatively intact native community types to excessively disturbed sites. Many of the transects placed in the salt desert shrub community type closely reflected the NRCS's general vegetation community description. The juniper vegetation type was also in relatively good condition and had appropriate vegetation cover and species diversity for the community type. However, the presence of cheatgrass in both of these systems sometimes yields an artificially high estimate for total vegetation cover. The vegetation community in the existing disturbed area of the East Allsops Test Burn Quarry clearly indicated the area had been previously disturbed. An abundance of cheatgrass and other weedy species was present with relatively little native species cover.

REFERENCE TRANSECTS

An annual evaluation of the reference transects in native Juniper vegetation communities yielded vegetation cover estimates within the range of natural variation within Juniper vegetation communities. Significant differences can not be detected at this time due to the natural range of variation in these vegetation communities as well as a lack of data, but trends can be noted. It is common to find vegetation cover ranging between 15-45% within any given year in this type of vegetation community depending upon transect placement.

Appendix A- Table 1 –Benches inspected in 2004 and corresponding treatments

Bench	Seeding Date	Seed Mix Rate	Growth media	Surficial treatment
5920 West	November, 1998 (first seeded in 1996)	22 PLS lbs broadcast	Limestone fines with growth media, growth media added in 1998 when reseeded	Limestone cobbles and uneven surface left
5900 West	November, 1998 (first seeded in 1996)	22 PLS lbs broadcast	Limestone fines with growth media, growth media added in 1998 when reseeded	Boulder Placement on bench –windbreak at end of bench, uneven surface left
5880 West	November, 1998	22 PLS lbs broadcast	6" growth media	Boulder placement on bench, uneven surface left
5900 West	November, 1998	22 PLS lbs broadcast	6-12" limestone fines with growth media	Primarily limestone fines, smooth surface
5920 NW	November, 1998	22 PLS lbs broadcast	6-12" limestone fines and composted manure	Limestone fines and cobbles
5880 Middle	November, 1998	22 PLS lbs broadcast	6-12" mixed limestone fines with growth media	Limestone cobbles, uneven surface left
5880 North	November, 1998	22 PLS lbs broadcast	6-12" limestone fines and composted manure	Limestone fines, smooth surface
5900 East	December, 1996	20 lbs/acre	Limestone fines	1500 lbs/ acre straw mulch, 50 lbs/acre 16-16-8 NPK fertilizer
5940 East	December, 1996	20 lbs/acre	Limestone fines	2500 lbs/acre straw mulch, 50 lbs/ acre 16-16-8 NPK fertilizer
5940 West	April, 1996	12 lbs/acre	Limestone fines	1000 lbs/acre hay, 40 lbs/acre 16-20-0- NPK fertilizer
5960 West	April, 1996	12 lbs/acre	Limestone fines	1000 lbs/acre straw, 40 lbs/acre 16-20-0- NPK fertilizer
5940 NW	April, 1996	12 lbs/acre	Topsoil over limestone fines	2000 lbs/acre hay, 40 lbs/acre 16-20-0 NPK fertilizer

Appendix A- Table 2- Reclamation Treatments at Flat Iron Quarry

Bench	Seeding Date	Date of soil application	Seed Mix Rate	Growth media
6180N	March 4, 2003	Sept. 4,2001	20 PLS lb/acre	6" topsoil
6140N	March 4, 2003	Sept. 4,2001	20 PLS lb/acre	6" topsoil
6110N	March 4, 2003	March 4, 2002	20 PLS lb/acre	6" topsoil
6110S	March 4, 2003	March 1, 2002	20 PLS lb/acre	6" topsoil
6120 saddle	March 4, 2003	May 28, 2002 Jan 24, 2003 Feb 22, 2003	20 PLS lb/acre	6-8" topsoil
Drill Rd south	March 4, 2003	March 4, 2003	20 PLS lb/acre	Trackhoe
6080N	March 4, 2003	March 1, 2002	20 PLS lb/acre	6" topsoil
6080S	March 4, 2003	March 1, 2002	20 PLS lb/acre	6" topsoil
6050S	March 4, 2003	Jan 7, 2002	20 PLS lb/acre	6" topsoil

Appendix A - Table 4. 1998 broadcast seed mix

Scientific Name	Common Name	Lbs/acre PLS
Agropyron cristatum	Nordan crested wheat	1
Agropyron fragile	Vavilov siberian wheatgrass	2
Oryzopsis hymenoides	Indian ricegrass	2-3
Agropyron dasystachyum	Thickspike wheatgrass	1
Agropyron riparium	Streambank wheatgrass	1
Elymus elymoides	Bottlebrush squirreltail	1-2
Penstemon eatonii	Firecracker penstemon	¼-1/2
Sphaeralcea grossulariafolia	Globemallow	1/10 – ¼
Melilotus officinalis	Yellow sweetclover	1/10 – ¼
Kochia prostrata	Forage kochia	½ - 1
Ceratoides lanata	Winterfat	1 – 2
Atriplex canescens	Fourwing saltbush	1 –2
Atriplex gardneri	Gardner's saltbush	1 –2
Atriplex confertifolia	Shadscale	1 –2
Artemisia tridentata var nova	Black sagebrush	1/10 – ½

Appendix A -Table 5. 1996 seed mix

Scientific Name	Common Name	Lbs/ acre PLS
Agropyron cristatum spp. desertorum	Crested wheatgrass	1.44
Elytrigia intermedia ssp trichoporum	Intermediate wheatgrass	2.88
Psathrostachys juncea	Russian wildrye	2.88
Kochia prostrata	Forage kochia	0.48
Melilotus officinalis	Yellow sweetclover	1.44
Atriplex confertifolia	Shadscale	1.44

Appendix A- Table 6 2003 Seed Mix

Scientific Name	Common Name	%	Lbs/ acre PLS
Agropyron cristatum	Crested wheatgrass	2.28	0.46
Elymus lanceolatus spp. dasystachyum	Thickspike wheatgrass	2.06	0.41
Elymus lanceolatus spp. riparium	Streambank wheatgrass	2.02	0.40
Oryzopsis hymenoides	Indian ricegrass	5.8	1.16
Pseudoroegneria spicata ssp spicata	Bluebunch wheatgrass	0.56	0.11
Elymus elymoides	Bottlebrush squirreltail	4.11	0.822
Artemisia nova	Black sagebrush	1.21	0.24
Melilotus officinalis	Yellow sweetclover	0.52	0.10
Ceratoides lanata	Winterfat	10.13	2.026
Kochia prostrata	Forage kochia	4.22	0.84
Atriplex gardneri	Gardner's saltbush	24.55	4.91
Atriplex canescens	4-wing saltbush	20.56	4.112
Penstemon eatonii	Firecracker penstemon	1.07	0.214
Atriplex confertifolia	Shadscale	14.03	2.806

Appendix A -Table 7. Summary of revegetated benches at the Cricket Mountain Plant, Poison Mountain Quarry, June, 2004.

Bench ID		5940E- Ocular estimation		5900E - Ocular estimation		5960W - Seedling count 100 sq.m.		5940W- Seedling count 100 sq.m.	
		Cover (%)	Rel Cover	Cover(%)	Rel Cover	Cover (%	Rel Cover	Cover (%)	Rel Cover
Scientific Name	Common Name								
Total Vegetation Cover		3		1		<1		<1	
Rock		22		18					
Gravel		65		80		RE		RE	
Bare soil						SEEDED		SEEDED	
Litter		10		1		SPRING		SPRING	
						2003		2003	
Cool season perennial grasses									
Agropyron fragile	Siberian wheatgrass					101 grass seed-		25 grass seed-	
Agropyron cristatum	Crested wheatgrass	<1		<1		lings counted		lings counted	
Agropyron dasystachyum	Thickspike wheatgrass								
Agropyron intermedium	Intermediate wheatgrass								
Agropyron riparium	Streambank wheatgrass								
Agropyron spicatum	Bluebunch wheatgrass	<1							
Elymus elymoides	Bottlebrush squirreltail								
Oryzopsis hymenoides	Indian ricegrass	<1		<1					
Psathyrostachys juncea	Russian wildrye	<1		<1					
Warm season perennial grasses									
Aristida purpurea	Purple three-awn	<1							
Introduced non-desirable annual grasses									
Bromus tectorum	Cheatgrass	<1							
Introduced non-desirable forbs									
Chorispora tenella	Blue mustard								
Descurainia pinnata	Flixweed								
Halogeton glomeratus	Halogeton	<1		<1					
Introduced desirable forbs									
Kochia prostrata	Forage kochia	<1		<1		4 plants		31 plants	
Melilotus officinalis	Yellow sweetclover								
Native perennial forbs									
Penstemon eatonii	Eaton's penstemon							1 plant	
Penstemon palmeri	Palmer's penstemon								
Sphaeralcea munroana	Munroe globemallow								
Native shrubs									
Artemisia nova	Black sagebrush	<1						2 plants	
Atriplex canescens	Four-wing saltbush	<1		<1		45 plants		4 plants	
Atriplex confertifolia	Shadscale	<1		<1		8 plants		6 plants	
Atriplex gardneri	Gardner's saltbush								
Chrysothamnus nauseosus	Rabbitbrush								
Gutierrezia sarothrae	Broom snakeweed	<1							

Appendix A -Table 7. Summary of revegetated benches at the Cricket Mountain Plant, Poison Mountain Quarry, June, 2004.

Bench ID		5920W		5900W		5880W		5880N	
		Cover (%)	Rel Cover	Cover (%)	Rel Cover	Cover (%)	Rel Cover	Cover (%)	Rel Cover
Scientific Name	Common Name								
Total Vegetation Cover		**18**		**15**		**19**		**18**	
Rock		18		16		27			
Gravel		56		62		43		63	
Bare soil						**1**		1	
Litter		8		6		12		18	
Cool season perennial grasses									
Agropyron fragile	Siberian wheatgrass	6	33%	7	47%	4	21%	<1	
Agropyron cristatum	Crested wheatgrass	9	50%	4	27%	14	74%	<1	
Agropyron dasystachyum	Thickspike wheatgrass			<1		1	5%		
Agropyron intermedium	Intermediate wheatgrass	<1		<1					
Agropyron riparium	Streambank wheatgrass	1	6%	1	7%	<1			
Agropyron spicatum	Bluebunch wheatgrass								
Elymus elymoides	Bottlebrush squirreltail								
Oryzopsis hymenoides	Indian ricegrass	<1		2	13%	<1			
Psathyrostachys juncea	Russian wildrye								
Warm season perennial grasses									
Aristida purpurea	Purple three-awn								
Introduced non-desirable annual grasses									
Bromus tectorum	Cheatgrass	<1		<1				13	72%
ntroduced non-desirable forbs									
horispora tenella	Blue mustard								
Descurainia pinnata	Flixweed								
Halogeton glomeratus	Halogeton			1	13%			<1	
Introduced desirable forbs									
Kochia prostrata	Forage kochia	<1		<1		<1		<1	
Melilotus officinalis	Yellow sweetclover								
Native perennial forbs									
Penstemon eatonii	Eaton's penstemon	2	11%	1	13%	<1		<1	
Penstemon palmeri	Palmer's penstemon								
Sphaeralcea munroana	Munroe globemallow	<1		<1		<1			
Native shrubs									
Artemisia nova	Black sagebrush	<1		<1		<1		<1	
Atriplex canescens	Four-wing saltbush	<1		<1		<1		5	28%
Atriplex confertifolia	Shadscale	<1						<1	
Atriplex gardneri	Gardner's saltbush								
Chrysothamnus nauseosus	Rabbitbrush								
Gutierrezia sarothrae	Broom snakeweed								

Appendix A -Table 7. Summary of revegetated benches at the Cricket Mountain Plant, Poison Mountain Quarry, June, 2004.

Bench ID		5940NW		5920NW		5900		5880 middle	
Scientific Name	Common Name	Cover (%)	Rel Cover	Cover (%)	Rel Cover	Cover (%)	Rel Cover	Cover (%)	Rel Cover
Total Vegetation Cover		18		12		8		27	
Rock		15				11		12	
Gravel		44		83		73		49	
Bare soil									
Litter		18		5		8		13	
Cool season perennial grasses									
Agropyron fragile	Siberian wheatgrass			3	25%	3	38%	6	22%
Agropyron cristatum	Crested wheatgrass	10	56%	4	33%	3	38%	13	48%
Agropyron dasystachyum	Thickspike wheatgrass							<1	
Agropyron intermedium	Intermediate wheatgrass	3	17%						
Agropyron riparium	Streambank wheatgrass					1	13%	1	4%
Agropyron spicatum	Bluebunch wheatgrass	<1							
Elymus elymoides	Bottlebrush squirreltail							<1	
Oryzopsis hymenoides	Indian ricegrass					1	12%	<1	
Psathyrostachys juncea	Russian wildrye	4	22%						
Warm season perennial grasses									
Aristida purpurea	Purple three-awn								
Introduced non-desirable annual grasses									
Bromus tectorum	Cheatgrass	4	22%	<1		<1		<1	
Introduced non-desirable forbs									
Chorispora tenella	Blue mustard								
Descurainia pinnata	Flixweed								
Halogeton glomeratus	Halogeton			<1				1	4%
Introduced desirable forbs									
Kochia prostrata	Forage kochia	<1		<1				<1	
Melilotus officinalis	Yellow sweetclover	<1				<1		<1	
Native perennial forbs									
Penstemon eatonii	Eaton's penstemon			2	17%	<1		3	11%
Penstemon palmeri	Palmer's penstemon							1	4%
Sphaeralcea munroana	Munroe globemallow					<1			
Native shrubs									
Artemisia nova	Black sagebrush			<1		<1		<1	
Atriplex canescens	Four-wing saltbush	<1		3	25%	<1		1	4%
Atriplex confertifolia	Shadscale			<1		<1		1	4%
Atriplex gardneri	Gardner's saltbush			<1		<1			
Chrysothamnus nauseosus	Rabbitbrush	<1							
Gutierrezia sarothrae	Broom snakeweed	<1				<1			

Appendix A -Table 7. Summary of revegetated benches at the Cricket Mountain Plant, Poison Mountain Quarry, June, 2004.

Bench ID		5860 Seedling count 100 sq.m.	
		Cover (%)	Rel Cover
Scientific Name	Common Name		
Total Vegetation Cover		<1	
Rock			
Gravel			
Bare soil		SEEDED	
Litter		SPRING	
		2003	
Cool season perennial grasses			
Agropyron fragile	Siberian wheatgrass	14 grass seed-	
Agropyron cristatum	Crested wheatgrass	lings counted	
Agropyron dasystachyum	Thickspike wheatgrass		
Agropyron intermedium	Intermediate wheatgrass		
Agropyron riparium	Streambank wheatgrass		
Agropyron spicatum	Bluebunch wheatgrass		
Elymus elymoides	Bottlebrush squirreltail		
Oryzopsis hymenoides	Indian ricegrass	1 plant	
Psathyrostachys juncea	Russian wildrye		
Warm season perennial grasses			
Aristida purpurea	Purple three-awn		
Introduced non-desirable annual grasses			
Bromus tectorum	Cheatgrass	<1	
ıtroduced non-desirable forbs			
ɔhorispora tenella	Blue mustard		
Descurainia pinnata	Flixweed		
Halogeton glomeratus	Halogeton	<1	
Introduced desirable forbs			
Kochia prostrata	Forage kochia		
Melilotus officinalis	Yellow sweetclover		
Native perennial forbs			
Penstemon eatonii	Eaton's penstemon	6 plants	
Penstemon palmeri	Palmer's penstemon		
Sphaeralcea munroana	Munroe globemallow		
Native shrubs			
Artemisia nova	Black sagebrush	1 plant	
Atriplex canescens	Four-wing saltbush	6 plants	
Atriplex confertifolia	Shadscale	19 plants	
Atriplex gardneri	Gardner's saltbush		
Chrysothamnus nauseosus	Rabbitbrush		
Gutierrezia sarothrae	Broom snakeweed	3 plants	

Appendix A. Table 8 Seedling counts for the Flat Iron Quarry and the West Dump, June, 2004

Bench ID		Flat Iron 6180 - Seedling count 100 sq.m.		Flat Iron 6140 - Seedling count 100 sq.m.		Flat Iron 6110 - Seedling count 100 sq.m.	
		Cover(%)	Rel Cover	Cover (%)	Rel Cover	Cover (%)	Rel Cover
Scientific Name	Common Name						
Total Vegetation Cover							
Rock							
Gravel						RE	
Bare soil		SEEDED		SEEDED		SEEDED	
Litter		3/4/2003		3/4/2003		3/4/2003	
						2003	
Cool season perennial grasses							
Agropyron fragile	Siberian wheatgrass	1 grass seed-		2 grass seed-		14 grass seed-	
Agropyron cristatum	Crested wheatgrass	lings counted		lings counted		lings counted	
Agropyron dasystachyum	Thickspike wheatgrass						
Agropyron intermedium	Intermediate wheatgrass						
Agropyron riparium	Streambank wheatgrass						
Agropyron spicatum	Bluebunch wheatgrass						
Elymus elymoides	Bottlebrush squirreltail	Area dominated		Area dominated		Area dominated	
Oryzopsis hymenoides	Indian ricegrass	by Halogeton		by Halogeton		by Halogeton	
Psathyrostachys juncea	Russian wildrye					but has more grasse	
						Atriplex spp and fora	
Warm season perennial grasses						kochia overall	
Aristida purpurea	Purple three-awn						
Introduced non-desirable annual grasses							
Bromus tectorum	Cheatgrass						
Introduced non-desirable forbs							
Chorispora tenella	Blue mustard						
Descurainia pinnata	Flixweed						
Halogeton glomeratus	Halogeton						
Introduced desirable forbs							
Kochia prostrata	Forage kochia	2 plants		12 plants		16 plants	
Melilotus officinalis	Yellow sweetclover						
Native perennial forbs							
Penstemon eatonii	Eaton's penstemon						
Penstemon palmeri	Palmer's penstemon						
Sphaeralcea munroana	Munroe globemallow						
Native shrubs							
Artemisia nova	Black sagebrush						
Atriplex canescens	Four-wing saltbush						
Atriplex confertifolia	Shadscale	2 plants				4 plants	
Atriplex gardneri	Gardner's saltbush						
Chrysothamnus nauseosus	Rabbitbrush						
Gutierrezia sarothrae	Broom snakeweed						
Ceratoides lanata	Winterfat						

Appendix A. Table 8 Seedling counts for the Flat Iron Quarry and the West Dump, June, 2004

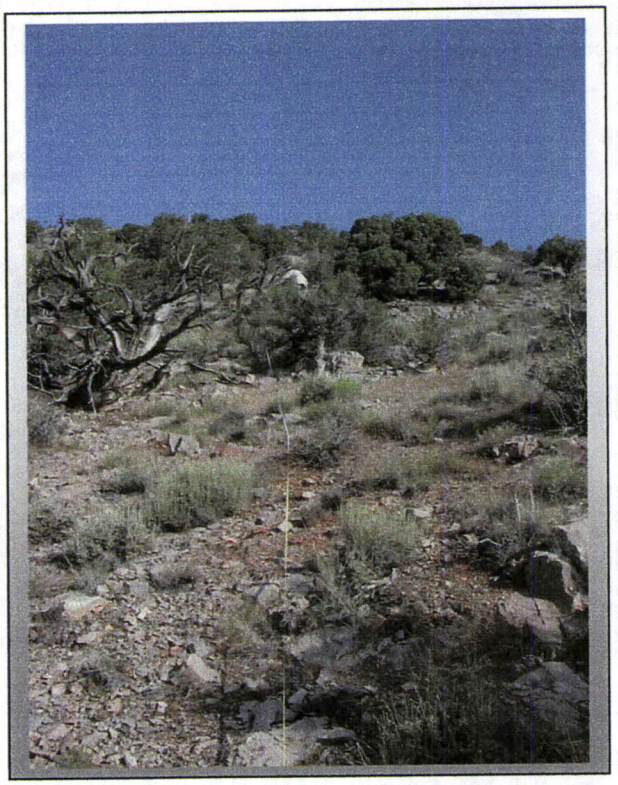
Bench ID		Flat Iron 6080 - Seedling count 100 sq.m.		West Dump- upper area - 2 transects		West Dump - middle area	
		Cover (%)	Rel Cover	Cover (%)	Rel Cover	Cover (%)	Rel Cover
Scientific Name	Common Name						
Total Vegetation Cover							
Rock							
Gravel							
Bare soil		SEEDED		SEEDED		SEEDED	
Litter		SPRING		3/5/2003		3/5/2003	
		2003					
Cool season perennial grasses							
Agropyron fragile	Siberian wheatgrass	10 grass seed-		0 to 698 grass		881 grass seed-	
Agropyron cristatum	Crested wheatgrass	lings counted		seedlings counted		lings counted	
Agropyron dasystachyum	Thickspike wheatgrass						
Agropyron intermedium	Intermediate wheatgrass						
Agropyron riparium	Streambank wheatgrass						
Agropyron spicatum	Bluebunch wheatgrass						
Elymus elymoides	Bottlebrush squirreltail						
Oryzopsis hymenoides	Indian ricegrass						
Psathyrostachys juncea	Russian wildrye	s					
		ge					
Warm season perennial grasses							
Aristida purpurea	Purple three-awn	Chiefly halogeton and					
		blue mustard, but					
Introduced non-desirable annual grasses		Gutierrezia sarothrae					
Bromus tectorum	Cheatgrass	prominent					
Introduced non-desirable forbs							
Chorispora tenella	Blue mustard						
Descurainia pinnata	Flixweed						
Halogeton glomeratus	Halogeton						
Introduced desirable forbs							
Kochia prostrata	Forage kochia			0 to 9		25 plants	
Melilotus officinalis	Yellow sweetclover			3 to 9		4 plants	
Native perennial forbs							
Penstemon eatonii	Eaton's penstemon			4 to 19		2 plants	
Penstemon palmeri	Palmer's penstemon						
Sphaeralcea munroana	Munroe globemallow						
Native shrubs							
Artemisia nova	Black sagebrush			0 to 1			
Atriplex canescens	Four-wing saltbush	1 plant		21 to 40		256 plants	
Atriplex confertifolia	Shadscale	1 plant		5 to 61		57 plants	
Atriplex gardneri	Gardner's saltbush						
Chrysothamnus nauseosus	Rabbitbrush						
Gutierrezia sarothrae	Broom snakeweed	2 plants					
Ceratoides lanata	Winterfat					5 plants	

Appendix A. Table 8 Seedling counts for the Flat Iron Quarry and the West Dump, June, 2004

Bench ID		West Dump-Lower area		Flat Iron Saddle Seedling count 100 sq.m.	
		Cover (%)	Rel Cover	Cover (%)	Rel Cover
Scientific Name	Common Name				
Total Vegetation Cover					
Rock					
Gravel					
Bare soil		SEEDED		SEEDED	
Litter		3/5/2003		3/4/2003	
Cool season perennial grasses					
Agropyron fragile	Siberian wheatgrass	36 grass seed-		21 grass seed-	
Agropyron cristatum	Crested wheatgrass	lings counted		lings counted	
Agropyron dasystachyum	Thickspike wheatgrass				
Agropyron intermedium	Intermediate wheatgrass				
Agropyron riparium	Streambank wheatgrass				
Agropyron spicatum	Bluebunch wheatgrass				
Elymus elymoides	Bottlebrush squirreltail				
Oryzopsis hymenoides	Indian ricegrass				
Psathyrostachys juncea	Russian wildrye				
Warm season perennial grasses					
Aristida purpurea	Purple three-awn				
Introduced non-desirable annual grasses					
Bromus tectorum	Cheatgrass				
Introduced non-desirable forbs					
Chorispora tenella	Blue mustard				
Descurainia pinnata	Flixweed				
Halogeton glomeratus	Halogeton				
Introduced desirable forbs					
Kochia prostrata	Forage kochia	4 plants		45 plants	
Melilotus officinalis	Yellow sweetclover	1 plant			
Native perennial forbs					
Penstemon eatonii	Eaton's penstemon				
Penstemon palmeri	Palmer's penstemon				
Sphaeralcea munroana	Munroe globemallow				
Native shrubs					
Artemisia nova	Black sagebrush				
Atriplex canescens	Four-wing saltbush	14 plants		15 plants	
Atriplex confertifolia	Shadscale	9 plants		7 plants	
Atriplex gardneri	Gardner's saltbush				
Chrysothamnus nauseosus	Rabbitbrush				
Gutierrezia sarothrae	Broom snakeweed				
Ceratoides lanata	Winterfat				

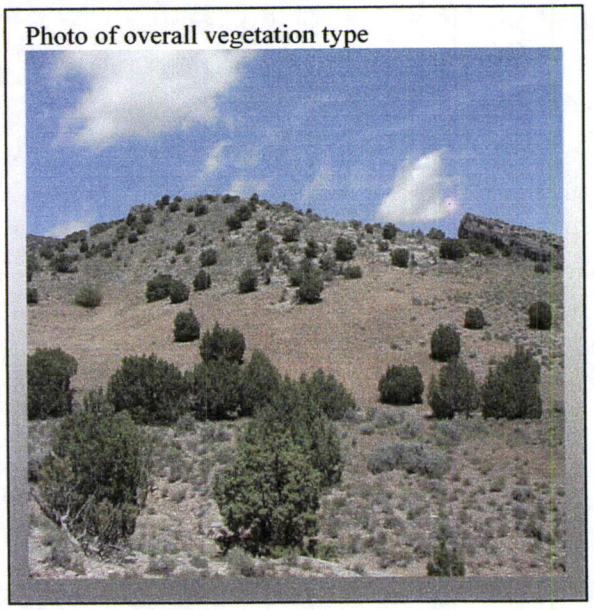
Appendix B- Reference Transects

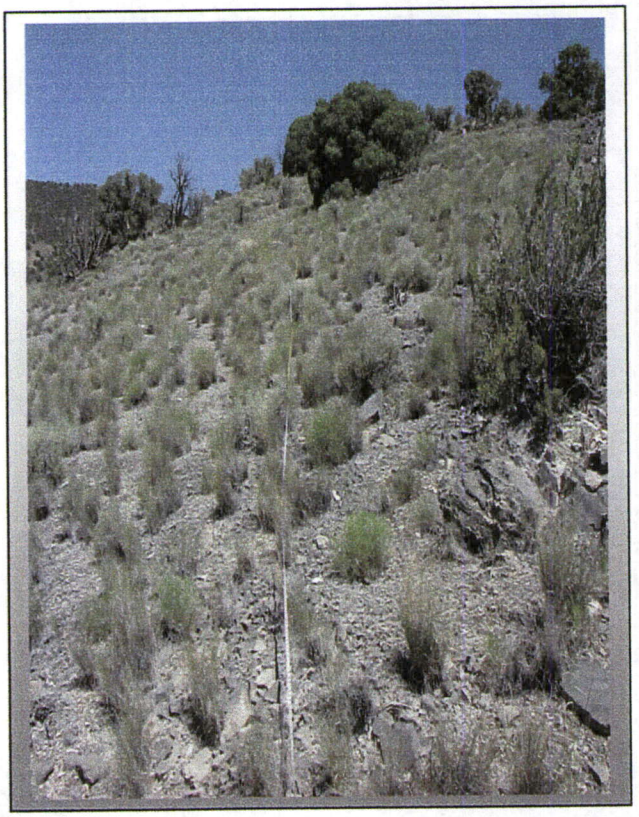
Reference Transect 1



Reference Transect 2

Photo of overall vegetation type





Appendix B- Table 1. Reference Transect 1 - Cricket Mountain, June, 2004

Reference Transect 1 Common Name	n=3 ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Total Vegetation Cover	Total Vegetation Cover	23.667	3.786	2.186	21.000	28.000		100.0 0
Total Ground Cover	Total Cover	98.667	1.155	0.667	98.000	100.000		100.0 0
Bare Soil	Bare Soil	2.000	0.000	0.000	2.000	2.000		100.0 0
Litter	Litter	15.000	2.000	1.155	13.000	17.000		100.0 0
Rock	Rock	31.333	6.506	3.756	25.000	38.000		100.0 0
Gravel	Gravel	28.667	7.024	4.055	22.000	36.000		100.0 0
Cool season perennial grasses								
Bluebunch wheatgrass	*Agropyron spicatum*	4.333	2.082	1.202	2.000	6.000	18.31	100.0 0
Indian ricegrass	*Oryzopsis hymenoides*	0.667	0.577	0.333	0.000	1.000	2.82	100.0 0
Sandberg's bluegrass	*Poa sandbergii*	0.333	0.577	0.333	0.000	1.000	1.41	66.6 7
Sub-total		**5.333**					**22.54**	
Warm season perennial grasses								
Purple threeawn	*Aristida purpurea*	0.333	0.577	0.333	0.000	1.000	1.41	33.3 3
Galleta grass	*Hilaria jamesii*	0.000	0.000	0.000	0.000	0.000	0.00	33.3 3
Sub-total		**0.333**					**1.41**	

Appendix B- Table 1. Reference Transect 1 - Cricket Mountain, June, 2004

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Annual grasses								
Cheatgrass	*Bromus rubens*	0.333	0.577	0.333	0.000	1.000	1.41	66.6 7
Red brome	*Bromus tectorum*	2.000	1.000	0.577	1.000	3.000	8.45	100.0 0
Sub-total		**2.333**					**9.86**	
Perennial forbs								
Gray's lomatium	*Lomatium grayii*	0.000	0.000	0.000	0.000	0.000	0.00	33.3 3
Phlox	*Phlox austromontana*	0.333	0.577	0.333	0.000	1.000	1.41	33.3 3
Munroe's globemallow	*Sphaeralcea munroana*	0.000	0.000	0.000	0.000	0.000	0.00	33.3 3
Sub-total		**0.333**					**1.41**	
Annual and biennial forbs								
Blue mustard	*Chorispora tenella*	0.667	1.155	0.667	0.000	2.000	2.82	33.3 3
Sub-total		**0.667**					**2.82**	
Sub-shrubs								
Broom snakeweed	*Gutierrezia sarothrae*	3.333	1.528	0.882	2.000	5.000	14.08	100.0 0
	Perityle stansburii	0.000	0.000	0.000	0.000	0.000	0.00	33.3 3
	Petrophytum caespitosum	0.333	0.577	0.333	0.000	1.000	1.41	66.6 7
Sub-total		**3.667**					**15.49**	

Appendix B- Table 1. Reference Transect 1 - Cricket Mountain, June, 2004

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Shrubs								
Black sagebrush	*Artemisia nova*	2.333	2.517	1.453	0.000	5.000	9.86	66.6 7
Shadscale	*Atriplex confertifolia*	0.000	0.000	0.000	0.000	0.000	0.00	33.3 3
Nevada Mormon tea	*Ephedra nevadensis*	0.333	0.577	0.333	0.000	1.000	1.41	66.6 7
Cliffrose	*Purshia mexicana*	4.000	1.000	0.577	3.000	5.000	16.90	100.0 0
Sub-total		**6.667**					**28.17**	
Cacti and succulents								
Claret cup cactus	*Echinocereus triglochidiatus*	0.000	0.000	0.000	0.000	0.000	0.00	33.3 3
Prickly pear cactus	*Opuntia polyacantha*	0.333	0.577	0.333	0.000	1.000	1.41	33.3 3
Sub-total		**0.333**					**1.41**	
Trees								
Juniper	*Juniperus osteosperma*	4.000	1.732	1.000	2.000	5.000	16.90	100.0 0
Sub-total		**4.000**					**16.90**	

Appendix B – Table 2 Reference Transect 2 Cricket Mountain June, 2004

Reference Transect 2 Common Name	n=3 ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Total Vegetation Cover		25.000	5.196	3.000	22.000	31.000		100.00
Total Ground Cover		98.000	2.646	1.528	95.000	100.000		100.00
Bare Soil		3.000	2.828	2.000	1.000	5.000		100.00
Litter		18.000	1.414	1.000	17.000	19.000		100.00
Rock		27.667	11.372	6.566	15.000	37.000		100.00
Gravel		29.000	6.557	3.786	23.000	36.000		100.00
Cool season perennial grasses								
Bluebunch wheatgrass	*Agropyron spicatum*	7.000	4.583	2.646	3.000	12.000	28.00	100.00
Indian ricegrass	*Oryzopsis hymenoides*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Needle and thread	*Stipa comata*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Sub-total		**7.000**					**28.00**	
Warm season perennial grasses								
Purple threeawn	*Aristida purpurea*	0.333	0.577	0.333	0.000	1.000	1.33	33.33
Galleta grass	*Hilaria jamesii*	0.667	1.155	0.667	0.000	2.000	2.67	33.33
Sub-total		**1.000**					**4.00**	

Appendix B – Table 2 Reference Transect 2 Cricket Mountain June, 2004

Common Name	ScientificName	Average	St Deviation	St Error	Low	High	Rel Cover	Frequency
Annual grasses								
Cheatgrass	*Bromus tectorum*	2.000	1.000	0.577	1.000	3.000	8.00	100.00
Sub-total		**2.000**					**8.00**	
Perennial forbs								
Sun dancer daisy	*Haplopappus acaulis*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Gray's lomatium	*Lomatium grayii*	0.667	1.155	0.667	0.000	2.000	2.67	66.67
Munroe's globemallow	*Sphaeralcea munroana*	0.333	0.577	0.333	0.000	1.000	1.33	33.33
Sub-total		**1.000**					**4.00**	
Sub-shrubs								
Broom snakeweed	*Gutierrezia sarothrae*	4.000	1.732	1.000	3.000	6.000	16.00	100.00
	Perityle stansburii	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Sub-total		**4.000**					**16.00**	
Shrubs								
Black sagebrush	*Artemisia nova*	5.667	4.619	2.667	3.000	11.000	22.67	100.00
Shadscale	*Atriplex confertifolia*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Douglas rabbitbrush	*Chrysothamnus viscidiflorus*	0.333	0.577	0.333	0.000	1.000	1.33	33.33
Nevada Mormon tea	*Ephedra nevadensis*	0.333	0.577	0.333	0.000	1.000	1.33	66.67

Appendix B – Table 2 Reference Transect 2 Cricket Mountain June, 2004

Common Name	ScientificName	Average	StDeviation	St Error	Low	High	Rel Cover	Frequency
Cliffrose	*Purshia mexicana*	2.333	1.528	0.882	1.000	4.000	9.33	100.00
Spiny horsebrush	*Tetradymia spinescens*	0.000	0.000	0.000	0.000	0.000	0.00	33.33
Sub-total		**8.667**					**34.67**	
Trees								
Juniper	*Juniperus osteosperma*	1.000	0.000	0.000	1.000	1.000	4.00	100.00
Sub-total		**1.000**					**4.00**	

Appendix B -Table 3. Comparison of Reference Transects -1998, 1999, 2000, 2001, 2002, 2003 and 2004

		1998	1999	2000	2001	2002	2003	2004
Total Vegetation Cover (%)		38.33	32.67	22.67	19.67	23.30	20.67	23.67
Litter (%)		11.67	15.00	17.70	10.00	12.67	9.30	15.00
Gravel (%)		6.00	22.00	22.00	34.30	34.30	36.00	28.67
Rock (%)		36.67	26.67	34.00	28.67	24.67	34.00	31.30
Bare Soil (%)		7.33	3.33	3.70	7.33	5.00	0.00	2.00
Total Cover (%)		92.33	96.67	96.30	92.67	95.00	100.00	98.00
Cool season perennial grasses								
Agropyron spicatum	Bluebunch wheatgrass	7.70	11.00	9.30	5.67	8.67	6.30	4.30
Blepharidacne kingii	King's desert grass		<1	<1	<1	<1	<1	<1
Oryzopsis hymenoides	Indian ricegrass	<1	<1	0.3	0.3	1.33	0.3	0.67
Poa sandbergii	Sandberg's bluegrass	0.30	0.33	<1	0.33	<1	0.67	0.33
Stipa comata	Needle and thread	<1	0.33	<1	0.33	<1	0.3	
Sub-total		8.00	11.67	9.60	7.33	10.00	7.67	5.33
Warm season perennial grasses								
Aristida purpurea	Three awn			2	0.33	<1	<1	0.33
Hilaria jamesii	Galleta grass	<1		0.3	0.33	<1	0.3	<1
Sub-total				2.3	0.66		0.3	0.3
Annual grasses								
Bromus rubens	Red brome	<1	<1	<1	0.33	<1	0.67	0.30
Bromus tectorum	Cheatgrass	8.00	3.33	0.30	<1	<1	1.00	2.00
Sub-total		8.00	3.33	0.30	0.33		1.67	2.33
Perennial forbs								
Haplopappus acaulis	Stemless goldenweed	<1	0.33	<1	<1	<1	<1	<1
Lomatium grayii	Gray's lomatium	0.33	<1	<1	<1	0.33	<1	<1
Phlox austromontana	Desert phlox	<1	<1	<1	<1	0.00	<1	0.30
Sphaeralcea munroa	Munroe's globemallow	<1	<1	<1	<1	<1	<1	<1
Sub-total		0.33	0.33	<1	0.33	0.33	<1	0.33
Sub-shrubs								
Gutierrezia sarothrae	Broom snakeweed	4.30	2.00	0.70	3.00	2.33	3.00	3.33
Petrophytum caespitosum	Rock spirea	<1	<1	<1	0.33	0.67	0.30	0.33
Sub-total		4.30	2.00	0.70	3.33	3.00	3.30	3.67
Shrubs								
Artemisia nova	Black sagebrush	5.67	7.67	2.70	3.00	4.00	3.00	2.33
Atriplex confertifolia	Shadscale		<1	<1	<1	<1	<1	<1
Ephedra nevadensis	Nevada ephedra	1.00	0.67	<1	<1	<1	0.3	0.33
Haplopappus watsonii	Goldenbush		<1	<1	1.33	0.33	0.3	<1
Purshia mexicana	Cliffrose	5.00	3.67	4.30	3.00	3.00	2.67	4.00
Tetradymia spinescens	Spiny horsebrush					<1	<1	
Sub-total		11.67	12.00	7.00	7.33	7.33	6.30	6.67
Cacti and succulents								
Echinocereus triglochidiatus	Claret cup	<1	0.33	<1	<1	0.00	<1	<1
Opuntia polyacantha		<1			<1	0	<1	0.33
Sub-total			0.33	<1	<1	0		0.33
Trees								
Juniperus osteosperma	Utah Juniper	7.00	3.00	2.7	1	2.667	1.3	4
Sub-total		7.00	3.00	2.7	1	2.7	1.3	4

Appendix B -Table 3. Comparison of Reference Transects -1998, 1999, 2000, 2001, 2002, 2003 and 2004

		1998	1999	2000	2001	2002	2003	2004
Total Vegetation Cover (%)		30.00	26.00	22.30	23.33	26.30	25.00	25.00
Litter (%)		8.67	13.30	15.70	17.00	8.67	13.00	18.00
Gravel (%)		14.30	31.00	25.70	24.33	22.00	32.67	29.00
Rock (%)		38.33	24.70	33.30	27.33	33.33	27.30	27.67
Bare Soil (%)		8.67	5.00	3.00	8.00	9.67	1.00	3.00
Total Cover (%)		91.30	95.00	97.00	92.00	90.33	99.00	97.00
Cool season perennial grasses								
Agropyron spicatum	Bluebunch wheatgrass	13.70	9.30	9.00	9.33	12.00	8.33	7.00
Blepharidacne kingii	King's desert grass	<1	1.00	<1	<1	0.00	<1	
Oryzopsis hymenoides	Indian ricegrass	<1	0.30	<1	<1	0.33	<1	<1
Poa sandbergii	Sandberg's bluegrass	<1	0.30	<1	<1	0.33	<1	
Stipa comata	Needle and thread	1.00	1.00	0.3	0.67	0.33	0.33	<1
Sub-total		14.70	11.90	9.30	10.67	12.99	8.67	7.00
Warm season perennial grasses								
Aristida purpurea	Three awn	0.30		1.3	0.67	1.33	0.67	0.33
Hilaria jamesii	Galleta grass	0.30	<1	<1	<1	<1	0.33	0.67
Sub-total		0.60		1.3	0.67	1.33	1.00	1
Annual grasses								
Bromus rubens	Red brome	<1	<1	0.3	<1	<1	<1	<1
Bromus tectorum	Cheatgrass	4.00	3.70	1.00	1.67	<1	1.67	2
Sub-total		4.00	3.70	1.30	1.67		1.67	2
Perennial forbs								
Haplopappus acaulis	Stemless goldenweed	<1	<1	<1	<1	0	<1	<1
Lomatium grayii	Gray's lomatium	0.33	<1	0.67	<1	0.33	0.33	0.67
Phlox austromontana	Desert phlox	<1	<1	<1	<1	0	<1	
Sphaeralcea munroa	Munroe's globemallow	0.33	<1	<1	<1	<1	<1	0.33
Sub-total		0.67	<1	0.67	0.67	0.33	0.33	1.00
Sub-shrubs								
Gutierrezia sarothrae	Broom snakeweed	3.00	5.70	2.33	3.00	2.67	4.00	4.00
Petrophytum caespitosum	Rock spirea	<1	<1	<1	0.67	0.33	<1	
Sub-total		3.00	5.70	2.33	3.67	3.00	4.00	4.00
Shrubs								
Artemisia nova	Black sagebrush	2.30	1.30	3.67	2.67	3.00	4.67	5.67
Atriplex confertifolia	Shadscale		<1		<1	<1	<1	<1
Ephedra nevadensis	Nevada ephedra		<1		<1	<1	0.33	0.33
Haplopappus watsonii	Goldenbush	<1	3.30		<1	0.33	<1	
Purshia mexicana	Cliffrose	2.67	<1	3.00	2.67	3.33	2.67	2.33
Tetradymia spinescens	Spiny horsebrush				0.00	0	<1	<1
Sub-total		5.00	4.60	6.67	5.33	6.66	7.67	8.67
Cacti and succulents								
Echinocereus triglochidiatus	Claret cup	<1	<1	<1	<1	<1	0.30	<1
Opuntia polyacantha					<1	<1	<1	<1
Sub-total			<1		<1		0.30	
Trees								
Juniperus osteosperma	Utah Juniper	1.70	<1	0.67	2	2.33	1.30	1
Sub-total		1.70	<1	0.67	2	2.33	1.30	1

This page is a reference page used to track documents internally for the Division of Oil, Gas and Mining

Mine Permit Number M0270006 Mine Name Cricket Mountain Project
Operator Graymont Western U.S. Date April 6, 2005
TO _____ FROM _____

__CONFIDENTIAL __BOND CLOSURE __LARGE MAPS __EXPANDABLE
__MULTIPUL DOCUMENT TRACKING SHEET __NEW APPROVED NOI
__AMENDMENT _OTHER Binder

Description YEAR-Record Number

__NOI X Incoming __Outgoing __Internal __Superceded

Assessment of Revegetated Test Benches, Reference Transects and Baseline Vegetation and Soil Assessment

___NOI __Incoming __Outgoing __Internal __Superceded

__NOI __Incoming __Outgoing __Internal __Superceded

__NOI __Incoming __Outgoing __Internal __Superceded

__TEXT/ 81/2 X 11 MAP PAGES __11 X 17 MAPS __LARGE MAP

COMMENTS: _____

CC: _____